

# The American Midland Naturalist

Devoted to Natural History, Primarily  
that of the Prairie States

Published by the University of Notre Dame,  
Notre Dame, Indiana

J. A. NIEUWLAND, C. S. C., Ph. D., Sc. D., Editor  
Botany.

## ASSOCIATE EDITORS

WALTER H. BUCHER  
University of Cincinnati  
Geology

N. M. GRIER  
Des Moines University  
Zoology

CARROLL LANE FENTON  
University of Cincinnati  
Paleontology

Some Species of <i>Viburnum</i> .....	<i>Benjamin Franklin Bush</i>	225
List of Flowering Plants and Ferns in the Dunes State Park and Vicinity, Porter County, Indiana.....	<i>Marcus Ward Lyon, Jr.</i>	245
The Marsh Hawk.....	<i>Benjamin Frank'in Bush</i>	297
Book Reviews .....	<i>C. L. F.</i>	301
Book Reviews .....	<i>F. W. J.</i>	303

PRICE \$1.50 A Year

SINGLE NUMBERS 30 CENTS  
FOREIGN, 6s. 6d.

Entered as second-class matter at Notre Dame, Indiana. Acceptance for mailing at  
special rate of postage provided for in section 1103, Act of October 3, 1917,  
authorized on July 3, 1918.

THE UNIVERSITY PRESS, NOTRE DAME, INDIANA

## Back Numbers of "The American Midland Naturalist."

Vol. I.—(1909-1910) 293 pp. Unbound .....	\$2.00
Vol. II.—(1911-1912) 330 pp. Unbound and exclusive of 3 Reprints to be bound in end of vol. ....	2.00
Inclusive of Three Reprints ( <i>see below</i> ). Extra .....	2.25
Vol. III.—(1913-1914). 383 pp. Unbound, exclusive of Reprint No. 4. ( <i>See below</i> ). (Nos. 1, 2, 3, 7.) are scarce and nearly out of print, costing 50 cts. each. ....	4.50
Inclusive of Reprint No. 4, extra .....	1.00
Vol. IV.—(1915-1916). Unbound .....	4.00
Vol. V.—(1917-1918). Unbound .....	3.00
Vol. VI.—(1919-1920). Unbound .....	3.00
Vol. VII.—(1921). Unbound .....	1.50
Vol. VIII.—(1922-1923). Unbound .....	3.00
Vol. IX.—(1924-1925). Unbound .....	3.00

Total \$29.25

## Publications.

HAHN, W. Analytic Study of Faunal Changes in Indiana, 2 plates, 1910, 27 pp. ....	\$ .15
GREENE, E. L. Leaflets of Botanical Observation and Criticism. 2 vols. Complete (1903-1912) .....	6.00
" " Cybele Columbiana. A series of Studies in Botany, chiefly North American. (All published) .....	.75
" " Pittonia, A series of Papers Relating to Botany and Botanists, 5 vols. (1887-1905) .....	14.00
" " Flora Franciscana, Parts I, II, III. (Part IV pub- lished long after the other parts, is quite un- obtainable, as all copies not immediately dis- tributed seem to have been lost in the San Francisco fire.) Price as published .....	2.00
" " Manual of the Botany of the Region of San Fran- cisco Bay (1894). Bound cloth .....	2.00
Unbound .....	1.50

## Reprints.

RAFINESQUE, C. S. Neogenyton, (1825) .....	.25
" " The Natural Family of the Carexides (1840) ..	.50
" " Scadiography or 100 Genera of Umbelliferous Plants etc. (1840) .....	1.50
" " Monographic des Coquilles Bivalves et Fluviales de la Riviere Ohio. Remarques sur les Rap- ports Naturels des Genres Viscum, Samolus et Viburnum. A Bruxelles (1820) .....	1.50
LECONTE, J. E. Reprints of Monographs without plates .....	2.50
With 42 photographic copies of unpublished plates (7x8), colored or uncolored. Prices on request	
LECONTE, J. E. Two extra plates reproduced from originals in N. Y. Bot. Garden, colored or uncolored— ..... Prices on request	

”  
-----\$2.00  
3  
----- 2.00  
----- 2.25  
rint  
arly  
----- 4.50  
----- 1.00  
----- 4.00  
----- 3.00  
----- 3.00  
----- 1.50  
----- 3.00  
----- 3.00  
-----  
\$29.25

tes,  
-----\$ .15  
m.  
6.00  
ny,  
----- .75  
nd  
14.00  
ub-  
an-  
is-  
an  
----- 2.00  
n-  
----- 2.00  
----- 1.50  
  
----- .25  
----- .50  
us  
----- 1.50  
es  
p-  
us  
----- 1.50  
----- 2.50  
ed  
request  
n  
request

# The

PL

---

VOL. 2

---

At  
specie  
to do  
the ot  
and p  
United  
count  
at lea  
cipal  
tingui

Pe  
showi  
been  
specie  
*bescen*  
Penns  
to ha  
quite  
Britto  
with  
them

---

1 B  
Britton  
Missou  
I doub  
Fernal  
ably O  
east as



# The American Midland Naturalist

PUBLISHED BI-MONTHLY BY THE UNIVERSITY OF NOTRE DAME,  
NOTRE DAME, INDIANA

---

VOL. X.

MARCH-MAY, 1927.

NOS. 8 and 9.

---

## SOME SPECIES OF VIBURNUM

BENJAMIN FRANKLIN BUSH

After reading the admirable paper of Blake's on some species of *Viburnum*<sup>1</sup>, it would seem that all the collector had to do was to collect his specimens and refer them to one or the other of the species he recognizes therein. But a careful and painstaking study of the species found in the middle United States has convinced me that Blake did not fully account for all the forms that occur in this part of the country, at least two of which had been referred to one of the principal species treated by him, and which are readily distinguished.

Perhaps the most important part of Blake's paper is the showing that *V. affine hypomalacum* is the plant that has been passing for *V. pubescens* with all authors, and that the species Britton described as *V. venosum* is really the *V. pubescens* of Pursh. However, there were collections from Pennsylvania, Ohio, Indiana and Kentucky, that Blake seems to have entirely overlooked, and these collections show two quite distinct forms, so much distinct from the *V. venosum* Britton, of the eastern States, that I placed both of them with *V. scabrellum* Chapman, of the Southern States and let them rest there until the past few months.

---

<sup>1</sup> Blake, Some Species of *Viburnum*, *Rhodora* 20: 11, 1918. Britton in the Manual of 1905, says of *V. molle* Michx., "Kentucky, Missouri and Iowa." This species undoubtedly occurs in Kentucky, but I doubt very much if it has ever been found in Iowa. Robinson and Fernald in the Manual in 1907, say of *V. molle*, "Kentucky (and probably Ohio) Missouri and Iowa." I have seen no specimens from so far east as Ohio, and the Iowa citation is certainly wrong.

Britton and Brown in the Illustrated Flora in 1913 merely follow Britton's Manual in citing Kentucky, Missouri and Iowa for this species.

In a list of the native shrubs of Iowa,<sup>2</sup> Pammel cites the Robinson and Fernald Manual as authority for including *V. molle* in his list, and adds that it occurs in Southern Iowa. He says of this species "leaves narrower than those of the preceding species (*V. pubescens*, i.e. *V. affine hypomalacum*), with slender petioles." This agrees quite well with *V. affine*, but does not describe *V. molle* at all, which has very wide round leaves.

Blake in this same paper,<sup>3</sup> says in a footnote of *V. molle*, "the name *Viburnum pubescens petiolum* (sic) Fitzpatrick (T. J. & M. M. F. L.) Proc. Iowa Acad. 7: 198, 1900, refers very clearly to *V. molle* Michx. (*V. Demetronis* Deane and Robinson)." I have Fitzpatrick's description of *V. pubescens petiolum* before me as I write this, and also his type material, which is precisely *V. affine* Bush, and the description also indicates this species. Blake might have been misled by the citation in the Robinson and Fernald Manual to assume that *V. molle* Michx., really did occur in Iowa. I am informed by Fitzpatrick that his Ms. name for this variety was *petiolatum*, and that one of his pupils changed this to *petiolum*, thinking that the word *petiolatum* was not proper. I have seen specimens in the Deam Herbarium, and some in the Herbarium of the Iowa State College, at Ames, Iowa, collected by Fitzpatrick in 1898 and 1899, that are named *V. pubescens petiolatum*. Blake's reference of *V. molle* to Iowa is clearly shown to be erroneous.<sup>4</sup>

<sup>2</sup> Pammel, Native shrubs of Iowa, Proc. Iowa State Hort. Soc. 49, 35, 1915.

<sup>3</sup> Blake, l. c. 13.

<sup>4</sup> Two names that have been in common use for the cranberry-tree, *Viburnum americanum* Miller, 1768, *V. Opulus americanum* (Miller) Aiton, 1789, have been shown by Blake to refer to two very different plants, the *V. americanum* Miller, Gard Dict. 1768, which was based in *Hydrangea arborescens* L. and the *V. Opulus americanum* Aiton, the plant which Britton and Brown in the Illustrated Flora in 1913, described as *V. Opulus*. It is quite apparent that Aiton intended

In the following account of some species of *Viburnum*, I recognize eleven species and four varieties, which is some five or six more than are described in the Manuals and Floras, and nine more than are described by Blake in his paper. In order that this paper may be as complete as possible, I have cited all the specimens examined of the species discussed, from Indiana, Illinois, Missouri and Iowa, that the fullest benefit may be derived from my studies, and that other students of their species may know precisely what my understanding of each species and variety was.

For the convenience of those who wish to name specimens of VIBURNUM of the species here considered, I offer the following:

#### KEY TO THE SPECIES

- A. Outer flowers of the cymes large, radiant; drupes red. B.
- A. None of the flowers radiant. C.
- B. Leaves doubly serrate, pinnately veined.

##### 1. VIBURNUM ALNIFOLIUM.

- B. Leaves 3-lobed, palmately veined.

##### 2. VIBURNUM TRILOBUM.

- C. Leaves palmately veined, 3-lobed. D.
- C. Leaves pinnately veined, coarsely serrate or dentate, the primary veins more or less prominent on the under surfaces of the leaves. E.
- D. Cymes very small, 12-25 mm. broad, the rays short; drupes red.

##### 3. VIBURNUM PAUCIFLORUM.

- D. Cymes larger, 4-7 cm. broad, the rays slender; drupes black.

to take up Miller's species *americanum* and reduce it to a variety under the European *V. Opulus* L., even if he did not mention Miller as the author of the name *americanum*, and this being the case the next available name for this species would be *V. trilobum* Marshall, 1785, and I do not understand why Blake did not use this name in his paper. I am constrained to speak of this now for the reason that I have here before me a book entitled Standardized Plant Names, bearing date of 1923, prepared by a sub-committee, in which the name *Viburnum americanum* is given for this same species, when in fact that name rests on the *Hydrangea arborescens* L.

4. *VIBURNUM ACERIFOLIUM*.

- E. Petioles very short, much less than 5 cm. long; stipules very pronounced; leaves densely pubescent, or almost velvety, beneath; cymes mostly 3-5 cm. broad; drupes oblong-oval, black, about 10 mm. long, edible; eastern.

6A. *VIBURNUM AFFINE HYPOMALACUM*.

- E. Petioles longer, up to 5 cm. long. F.  
F. Leaves glabrous, or merely with tufts of hairs in the axils of the primary veins beneath; stipules lacking; eastern and northern.

7. *VIBURNUM DENTATUM*.

- F. Leaves pubescent beneath, sometimes densely so. G.  
G. Drupes oblong, about 10-15 mm. long; stipules present. H.  
G. Drupes globose-ovoid, about 8 mm. long, inedible; cymes mostly 5-10 cm. broad. J.  
H. Leaves ovate, ovate-oblong, or ovate-lanceolate; cymes mostly 3-5 cm. broad; drupes about 10 mm. long; western and northern.

6. *VIBURNUM AFFINE*.

- H. Leaves round-ovate or nearly orbicular, cordate at the base, very soft; cymes 5-10 cm. broad; drupes about 15 mm. long; southern. I.  
I. Leaves softly pubescent all over the under surfaces.

8. *VIBURNUM MOLLE*.

- I. Leaves glabrous or nearly so between the primary veins beneath; primary veins pubescent.

9A. *VIBURNUM MOLLE FORMA LEIOPHYLLUM*.

- J. Twigs, petioles, peduncles and rays of the cymes more or less fascicled-pubescent or fascicled-tomentose, scarcely or not at all scabrous. K.  
J. Twigs, petioles, peduncles and rays of the cymes more or less scurfy and scabrous; stipules lacking; veins on the lower surfaces of the leaves not very prominent; southern. M.  
K. Lower surfaces of leaves very veiny, the primary veins prominent, the cross-veins conspicuous, roughish-pubescent or fascicled-pubescent beneath; stipules lacking; eastern and northern.

## 5. VIBURNUM PUBESCENS.

- K. Leaves not very veiny, the primary veins on the under surface of the leaves inconspicuous or scarcely noticeable. L.  
L. Lower surfaces of the leaves densely soft-pubescent or nearly velvety; stipules present.

## 9. VIBURNUM DEAMII.

- L. Lower surface of the leaves merely pubescent along the primary veins; stipules present, or sometimes rare or lacking. M.  
M. Young branchlets pubescent, rarely a few petioles with stipules.

## 9A. VIBURNUM DEAMII CANBYI.

- M. Young branchlets glabrous; most of the petioles bearing stipules.

## 9B. VIBURNUM DEAMII INDIANENSE.

- N. Whole plant very scurfy-scaly; leaves larger and thicker, densely fascicular-pubescent beneath; cymes larger, 7-14 cm. wide, densely fascicular-pubescent; drupes larger.

## 10. VIBURNUM SCABRELLUM.

- N. Plant nearly glabrous, or but little scurfy-scaly; leaves smaller and thinner, glabrous above and soon glabrous beneath; cymes much smaller, 4-6 cm. wide, soon becoming glabrate; drupes much smaller.

## 11. VIBURNUM ASHEI.

1. VIBURNUM ALNIFOLIUM Marsh. Arb. Am. 102. 1785.

*V. lantanoides* Michx. Fl. Bor. Am. 1: 179, 1803.

N. B. to N. Car., Ont. Tenn., and Mich., according to Britton and Brown in Ill. Flora, 1913.

N. B. to Ont., Mich. to Pa., and in the mountains of N. Car., according to Robinson and Fernald in Manual, 1908.

N. B. to Mich. and N. Car., according to Small in Flora, 1913, specimens of this northern species have been examined by me, amongst the several hundred specimens of *Viburnum* examined.

2. VIBURNUM TRILOBUM Marsh. Arb. Am. 162. 1785.

*V. americanum* of most authors, not *V. americanum* Mil-

ler, 1768, which is said on authority of Blake to be nothing but *Hydrangea arborescens* L.

*V. Opulus americanum* (Mill.) Ait. Hort. Kew. 1: 373. 1789, obviously based on *V. americanum* Mill., which is only *Hydrangea arborescens* L.

*V. Opulus americanum* of many authors, not *V. Opulus* L., 1753, which is an European species.

Nfd. to Que. and B. Col. south to N. J., Pa., Mich., Wis., and Ia., according to Robinson and Fernald in Manual, 1908.

Nfd. to B. Col., N. J., Mich., Ia., S. Dak., and Ore., according to Britton and Brown in Ill. Flora, 1913.

#### SPECIMENS EXAMINED:

##### INDIANA

Clark Station, *Gamon*, August 20, 1898, D. Herb.; Clear Lake, *Deam* 15857, June 6, 1915, D. Herb.; Lake George, *Burrill*, July 13, 1880; Lake Oliver, *Deam* 15857, D. Herb.; Ontario, *Deam* 15020, August 30, 1914; Wells County, *Deam*, May 13, 1903.

##### ILLINOIS

Mount Carmel, *Schneck*, June 1865, U. of Ill. Herb.; Peoria, *Brendel*, date not given, U. of Ill. Herb.

##### IOWA

Fayette, *Fink*, September, 1893; Pierce's Bridge, *Mrs. Tuttle* 10, October, 1913, P. Herb.; Postville, *Pammel* and *Schultz*, June 15, 1913, P. Herb.

3. *VIBURNUM PAUCIFLORUM* Pylaie; T. & G. Fl. N. A. 2: 17 1841.

*V. Opulus eradiatum* Oakes, Hovey's Mag. 7: 183. 1841.

Nfd. to Alaska, Pa., Col. and Wash., according to Britton and Brown in Ill. Flora. 1913.

Nfd. and Lab. to Alaska, south to the mountains of Cape Breton Island, northern New England, Allegheny County, Pa., northern Mich., Minn., Col., and Washington, according to Robinson and Fernald in Manual, 1908.

No specimens of this high northern species have been seen by me amongst the large number of specimens examined.

4. *VIBURNUM ACERIFLORUM* L. Sp. Pl. 268. 1753

N. B. to Ga., Ala., Ont., Mich., and Minn., according to Britton and Brown in Ill. Flora, 1913.

N. B. to Ont., Minn., and Ga., according to Small in Flora, 1913. N. B. to Minn., Ky., and Ga., according to Robinson and Fernald in Manual, 1908.

A species of the northeastern States, extending as far southwest as Indiana and Illinois.

## INDIANA

Adams Lake, *Deam* 14837, August 27, 1914, D. Herb.; Brazil, *Deam* 38998, July 7, 1923, D. Herb.; Borden, *Deam* 40024, October 11, 1923, D. Herb.; Buffalo, *Deam* 29514, August 24, 1919, D. Herb.; Bloomington, *Deam* 23595, June 9, 1917, D. Herb.; Bloomington, *Deam* 38959, July 4, 1923, D. Herb.; Charleston, *Deam* 17996, July 27, 1919, D. Herb.; Cincinnati, *Deam* 26100, August 10, 1918, D. Herb.; Clear Lake, *Deam* 26408, September 13, 1918, D. Herb.; Clear Lake, *Deam*, June 12, 1904, D. Herb.; Cataract, *Deam* 10295, October 15, 1911, D. Herb.; Delaware, *Deam* 36990, July 22, 1922, D. Herb.; Dune Park, *McDonald*, July 4, 1902, U. of Ill. Herb.; Elizabeth, *Deam* 16383, June 24, 1915, D. Herb.; Fort Wayne, *Deam* 34536, July 31, 1921, D. Herb.; Gilead, *Deam* 31908, July 16, 1920, D. Herb.; Grayford, *Deam* 38593, May 30, 1923, D. Herb.; Hartford City, *Deam* 32058, August 5, 1920, D. Herb.; Helmsburg, *Deam* 6567, June 5, 1910, D. Herb.; Helmsburg, *Deam* 11160, June 1912, D. Herb.; Jackson Township, Wells County, *Deam*, June 1, 1902, D. Herb.; Kendallville, *Deam* 3079, May 31, 1908, D. Herb.; Kent, *Deam* 35282, October 10, 1921, D. Herb.; Knox, *Deam* 19969, June 1, 1916, D. Herb.; Lafayette, *Dorner*, June 8, 1901, D. Herb.; Miller, *Chase* 105, June 14, 1897, U. of Ill. Herb.; Miller, *Chase* 517, August 23, 1897, U. of Ill. Herb.; Miller, *Chase* 1258, October 5, 1899, U. of Ill. Herb.; Miller, *Chase* 1775, May 30, 1902, U. of Ill. Herb.; Mitchell, *Deam* 1725, July 12, 1915, D. Herb.; Mitchell, *Deam* 18501, September 2, 1915, D. Herb.; Morgantown, *Deam* 877, May 23, 1906, D. Herb.; Michigan City, *Deam* 5225, August 16, 1908, D. Herb.; Morgantown, *Deam* 860, May 22, 1906, D. Herb.;



Milford, *Deam* 34474, July 3, 1921, D. Herb.; Metamora, *Deam* 32886, September 17, 1920, D. Herb.; Middlebury, *Deam* 10991, June 4, 1912, D. Herb.; Mudlavia, *Deam* 10008, September 11, 1911, D. Herb.; Mount Etna, *Deam* 31041, June 8, 1920, D. Herb.; Brown County, *John S. Wright*, July 14, 1892, U. of Ill. Herb.; Clark County, *Deam* 38613, June 1, 1923, D. Herb.; Clark County, *Deam* 6466, May 21, 1910, D. Herb.; Adams County, *Deam* 32598, August 31, 1920, D. Herb.; Hancock County, *Deam* 12424, September 19, 1912, D. Herb.; Jennings County, *Deam* 9147, July 9, 1911, D. Herb.; Decatur County, *Deam* 40073, October 15, 1923, D. Herb.; Orange, *Deam* 34048, May 16, 1921, D. Herb.; Pine, *Deam* 2354, July 28, 1907, D. Herb.; Plymouth, *Deam* 15098, Aug. 31, 1914, D. Herb.; Paoli, *Deam* 35631, May 14, 1922, D. Herb.; Pulaski, *Deam* 38849, June 9, 1923, D. Herb.; Round Lake, *Deam* 14545, August 23, 1914, D. Herb.; Russellville, *Grimes* 7736, March 5, 1911, U. of Ill. Herb.; Shoals, *Deam* 12869, May 20, 1913, D. Herb.; Shoals, *Deam* 17204, July 11, 1915, D. Herb.; Saint Joe, *Deam* 32551, August 30, 1920, D. Herb.; South Bend, *Deam* 14207, May 29, 1914, D. Herb.; Salem, *Deam* 20579, June 29, 1916, D. Herb.; Sugar Creek, *Deam* 7248, August 21, 1910, D. Herb.; Terre Haute, *Deam* 30862, September 17, 1920, D. Herb.; Montgomery County, *Deam* 9264, July 23, 1911, D. Herb.; Vallonia, *Deam* 17428, July 15, 1915, D. Herb.; Versailles, *Deam* 16117, June 18, 1915, D. Herb.; Van Buren, *Deam*, June 16, 1907, D. Herb.; Van Buren, *Deam*, July 7, 1907, D. Herb.; Cannelton, *Deam* 33210, October 1, 1920, D. Herb.

## ILLINOIS

Calumet Heights, *Gates*, May 30, 1906, U. of Ill. Herb.; Calumet Heights, *Gates*, August 16, 1906, U. of Ill. Herb.; Elgin, *Vasey*, date not given, U. of Ill. Herb.; Ravinia, *Gates* 1699.1, June 22, 1907, U. of Ill. Herb.; River Grove, *Chase* 282, July 14, 1897, U. of Ill. Herb.; Thornton, *Chase* 1080, June 2, 1899, U. of Ill. Herb.

5. *VIBURNUM PUBESCENS* (Aiton) Pursh, Fl. Am. Sept. 1: 202. 1814.

*V. dentatum pubescens* Ait. Hort. Kew. 1: 372. 1789.



*V. venosum* Britton, Man ed. 1, 871, 1901.

*V. molle* of authors in part, not *V. molle* Michx. 1803.

A species of New England, as far south and west as Delaware and eastern Pennsylvania. Martha's Vineyard and Nantucket to Pa. and Del., according to Robinson and Fernald in Manual, 1909.

Eastern Mass. to N. J., Pa. and Va., according to Britton and Brown in Ill. Flora, 1913, the Virginia citation evidently referring to *V. Deamii Canbyi*, which is here included in *V. venosum*.

Eastern Mass. to Pa., and Del., and reappearing in a peculiar form in South Carolina, according to Rehder,<sup>5</sup> l. c. but the South Carolina specimens must belong to some other species, as *V. pubescens* does not get so far south as that State.

No specimens of this northern species have been seen by me amongst the many specimens examined.

6. VIBURNUM AFFINE Bush, ex Rehder, in Sargent, Trees and Shrubs 1: 135. 1903.

*V. pubescens affine* (Bush) Rehder, Mitt. Deutsch. Dendrol. 263. 1913.

*V. pubescens* authors, in small part, not *V. pubescens* Pursh, 1814.

*V. pubescens petiolum* Fitzpatrick, Proc. Iowa Acad. Sci. 7: 198. 1900, type from Rock Creek, Jefferson County, Iowa, Fitzpatrick, Fitzpatrick,<sup>6</sup> l. c., co-type from Jackson County, Iowa, Fitzpatrick, Fitzpatrick,<sup>7</sup> l. c., which he says was referred to *V. dentatum*, along with many other Iowa specimens. Fitzpatrick originally wrote this *petiolatum*, but some one of his pupils changed this to *petiolum*, as being the more proper.

Ontario, Ill., Minn., Ia., Va., and Mo., according to Blake,<sup>8</sup> l. c., but the Virginia reference must be an error, as I have not seen any specimens from anywhere east of Indiana.

<sup>5</sup> Rehder, l. c. 60.

<sup>6</sup> Fitzpatrick, l. c. 199.

<sup>7</sup> Fitzpatrick, l. c. 199.

<sup>8</sup> Blake, l. c. 13.

## SPECIMENS EXAMINED:

## ILLINOIS

Calumet Heights, *Gates*, May 30, 1906, U. of Ill. Herb.; Carlinville, *Andrews*, June 1, 1891, U. of Ill. Herb.; Fountaindale, *Bebb*, month not given, 1867, U. of Ill. Herb.; Glenwood, *Chase* 54, June 9, 1897, U. of Ill. Herb.; Peoria, *Brendel*, June, year not given, U. of Ill. Herb.; Peoria, *Brendel*, date not given, U. of Ill. Herb.; Peoria, *McDonald*, May, 1884, U. of Ill. Herb.

## INDIANA

Bluffton, *Deam*, May 26, 1905, D. Herb.; Bluffton, *Deam*, May 26, 1905, D. Herb.; Broad Ripple, *Deam*, June 3, 1897, D. Herb.; Clear Lake, *Deam*, June 12, 1904, D. Herb.; Garrett, *Deam* 3142, June 30, 1908, D. Herb.; Long Lake, *Kienholz*, May 26, 1918, U. of Ill. Herb.; Michigan City, *Deam*, September 13, 1919, D. Herb.; Miller's, *Deam* 9569, August 14, 1911, D. Herb.; Miller's, *Deam* 32331, August 24, 1920, D. Herb.; Waverly Beach, *Deam* 19995, date not given, D. Herb.

## IOWA

Allamakee County, *Shultz*, August, 1914, P. Herb.; Ames, *Ellis* 25, July 20, 1914, P. Herb.; Ames, *Pammel*, May 21, 1901, P. Herb.; Ames, *Sinires*, no month given, 1890, P. Herb.; Boone County, *Pammel*, *Buchanan* and *King* 3965, July 25, 1903, P. Herb.; Boone County, *King*, photograph, no date, P. Herb.; Boone County, *Pammel*, May 1898, P. Herb.; Boone County, *Pammel*, no month given, 1898, P. Herb.; Boone County, *Pammel*, May 21, 1921, P. Herb.; Boone County, *Pammel*, August, 1898, P. Herb.; Backbone Park, *Pammel*, August 23, 1920, P. Herb.; Cherokee, *Pammel*, September 5, 1920, P. Herb.; Decatur County, *Anderson*, May 17, 1902, P. Herb.; Decorah, *Holway*, May 21, 1881, P. Herb.; Delaware County, *Bode*, August, 1919, P. Herb.; Dubuque County, *Pammel* and *Frank*, June 18, 1922, P. Herb.; Clayton County, *Pammel* 12, June 10, 1917, P. Herb.; Estherville, *Pammel*, September 17, 1920, P. Herb.; Estherville, *Wolden* 405, May 29, 1922, P. Herb.; Fayette, collector not given, May 4, 1894, P. Herb.; Iron Springs, collector not given, July 25, 1917, P.

Herb  
V. d  
31, 1  
mel,  
1919  
Masc  
Pamm  
Pamm  
McG

C  
Dum  
9494  
Sept  
21, 1  
1925  
Herb  
Mont  
Bush  
tober  
6, 19  
Herb  
Bush

6  
V  
cens,  
V  
1900  
V  
1915  
V  
India  
T  
cens  
V  
acco  
mens

Herb.; Johnson County, *Fitzpatrick*, May 27, 1900, labeled *V. dentatum*, P. Herb.; Johnson County, *Fitzpatrick*, July 31, 1898, labeled *V. petiolatum*, P. Herb.; Lake Mills, *Pammel*, August 22, 1918, P. Herb.; Lamont, *Bode*, August 13, 1919, P. Herb.; Linn Creek, *Pammel*, July 28, 1918, P. Herb.; Mason City, *Pammel*, September 4, 1902, P. Herb.; Moingona, *Pammel* and *Combs*, May 22, 1897, P. Herb.; no locality given, *Pammel* and *Miller*, no month given, 1911, P. Herb.; North McGregor, *Pammel*, July 7, 1891, P. Herb.

## MISSOURI

Cole Camp Creek, *Trelease* 3, May 19, 1904, A. A. Herb.; Dumas, *Bush* 5893, May 8, 1909, A. A. Herb.; Dumas, *Bush* 9494, August 29, 1921, A. A. Herb.; Dumas, *Palmer* 21890, September 7, 1922, A. A. Herb.; Eagle Rock, *Bush* 189, June 21, 1897, A. A. Herb.; Galena, *Palmer* 24873, September 24, 1925, A. A. Herb.; Monteer, *Bush* 2815, May 11, 1905, A. A. Herb.; Monteer, *Bush* 3395, September 23, 1905, A. A. Herb.; Monteer, *Bush* 3603, October 8, 1905, A. A. Herb.; Monteer, *Bush* 4746, May 27, 1907, A. A. Herb.; Monteer, *Bush*, October 6, 1920, A. A. Herb.; Monteer, *Palmer* 19360, October 6, 1920, A. A. Herb.; Swan, *Bush* 41, June 5, 1899, A. A. Herb.; Swan, *Bush* 776, October 10, 1899, A. A. Herb.; Swan, *Bush* 4575, May 20, 1907, A. A. Herb.

6A. VIBURNUM AFFINE HYPOMALACUM Blake, *Rhodora* 20: 14, 1918.

*V. pubescens*, of large part, of most authors, not *V. pubescens*, Pursh, 1814.

*V. pubescens* Fitzpatrick, Proc. Iowa Acad. Sci. 7: 198, 1900.

*V. pubescens* Pammel, Proc. Iowa State Hort. Soc. 44, 1915.

Vermont to Ontario, Manitoba, Saskatchewan, south to Indiana, Illinois, Missouri and Iowa.

This northern form has been commonly named *V. pubescens* by authors, but it is clearly distinct from that species.

Vermont and Ontario to Georgia, Michigan and Manitoba, according to Blake l. c. 14, 1918, but I have seen no specimens from any of the southern States.

## SPECIMENS EXAMINED:

## INDIANA

Adams County, *Deam* 32599, August 31, 1920, D. Herb.; Cedar Creek, *Deam*, 15825, May 31, 1915, D. Herb.; Columbia City, *Deam* 36824, July 10, 1922, D. Herb.; Elkhart, *Deam* 32445, August 27, 1920, D. Herb.; High Lake, *Deam* 32651, June 18, 1917, D. Herb.; Michigan City, *Deam* 38802, June 2, 1923, D. Herb.; Michigan City, *Deam* 36402, June 10, 1922, D. Herb.; Mongo, *Deam* 32474, August 28, 1920, D. Herb.; North Manchester, *Deam* 39554, August 10, 1923, D. Herb.

## ILLINOIS

Maywood, *Chase* 21, June 2, 1897, U. of Ill. Herb.; Ringwood, *Vasey*, date not given, U. of Ill. Herb.

## MISSOURI

Dumas, *Bush*, September 7, 1922, A. A. Herb.; Dumas, *Palmer* 21845, September 7, 1922, A. A. Herb.

## IOWA

Ames, *Carver*, month not given, 1895, P. Herb.; Ames, *Pammel* and *Combs*, month not given, 1897, P. Herb.; Decatur County, *Fitzpatrick*, May 29, 1898, labelled *V. pubescens*, P. Herb.; Decatur County, *Fitzpatrick*, May 29, 1898, P. Herb.; Fort Dodge, *Horton*, May 1912, P. Herb.; Lake Okoboji, *Pammel* 467, July 25, 1914, P. Herb.

## 7. VIBURNUM DENTATUM L. Sp. Pl. 268. 1753.

New Brunswick and Ontario south to Georgia and western New York, Michigan and Minnesota, according to Britton and Brown in Ill. Flora, 1913, but I have seen no specimens from the southern States.

New Brunswick to northern Georgia, west to western New York and southern Ontario, Robinson and Fernald in Manual, 1908.

New Brunswick to Ontario, Minnesota and Florida, Small in Flora, 1913, but the Florida citation is certainly erroneous, as this species does not reach Florida or any of the southern States.

A species of the northeastern States, extending to Indiana, western Illinois and Iowa.

## INDIANA

Henryville, *Deam* 38606, June 1, 1923, D. Herb.; Henryville, *Deam* 38606, October 13, 1923, D. Herb.

## ILLINOIS

Olney, *Ridgway*, 1926, September 24, 1922, R. Herb.; Olney, *Ridgway* 2388, May 20, 1925, R. Herb.

## IOWA

Decatur County, *Anderson*, date not given, P. Herb.

8. VIBURNUM MOLLE, Michx. Fl. Bor. Am. 1:180. 1803.

*V. Demetronis* Deam and Robinson, Bot Gaz. 22: 167. 1896.

Kentucky, southern Indiana and southern Missouri.

Kentucky, Missouri and Iowa according to Britton in Manual, 1905, but the Iowa reference must be based on some other species, as no specimens are known of this species from Iowa.

Kentucky (and probably Ohio) Missouri and Iowa, Robinson and Fernald in Manual, 1908, but the Iowa citation must apply to *V. affine*, as no specimens are known of *V. molle* from Iowa, and all evidence points to *V. affine* as the basis of these references to Iowa.

Kentucky, Missouri and Iowa, Britton and Brown in Ill. Flora, 1913, being merely a repetition of the range given by the Britton Manual.

Iowa, according to Pammel in Trans. Iowa State Hort. Soc. 49: 44. 1915, but Pammel's specimens were certainly *V. affine*, for his description "leaves narrower than the preceding species (*V. pubescens*, i. e. *V. affine hypomalacum*) with slender petioles," applies clearly to *V. affine* and not to *V. molle*, which has broad, round, soft leaves.

Iowa, according to Blake, l. c. 13, referring Fitzpatrick's *V. pubescens petiolum* to this species, but Fitzpatrick's variety

is clearly *V. affine* Bush, as shown by both his description and specimens.

Cole Camp Creek and Galena, Missouri, Rehder, l. c. 57, 1904. Boone and Carroll Counties, Indiana, Rehder, l. c. 57, 1904.

#### SPECIMENS EXAMINED:

##### INDIANA

Idaville, *Deam* 17764, July 22, 1915,<sup>9</sup> D. Herb.; Idaville, *Deam* 58344, September 17, 1923, D. Herb.; Idaville, *Deam* 38344, September 17, 1923, D. Herb.; Versailles, *Deam* 38580, May 30, 1923, D. Herb.; Versailles, *Deam* 40064, October 14, 1923, D. Herb.

##### MISSOURI

Christian County, *Bush* 3480, September 28, 1905,<sup>10</sup> A. A. Herb.; Christian County *Bush* 4625, May 21, 1907, A. A. Herb.; Cole Camp Creek, *Demetrio*, May 27, 1896, TYPE of *V. Demetronis*, A. A. Herb.; Cole Camp Creek, *Trelease* 384, July 17, 1897, A. A. Herb.; Galena, *Palmer* 14361, September 18, 1918, A. A. Herb.; Galena, *Palmer* 23872, September 24, 1923, A. A. Herb.

9 Of this collection, Deam says "this is the outlaw specimen, note shape of fruit," alluding to its dissimilarity to the fruit of *V. Deamii* and *V. Deamii indianense*, which were at that time included in *V. molle* by him, as differing from *V. pubescens*. The piece of bark mounted on this sheet is not from the same plant as the leafing specimen, as it is nearly black, and not exfoliating, while *molle* has yellowish-brown loose exfoliating bark.

10 This species was found on the rocky banks of Billiu Creek, just north of the Taney County line, in Christian County, about five miles North of Swan, Taney County, on Billiu Creek, where *V. molle leiophyllum* is fairly common. It is therefore probable that *V. molle* also occurs in Taney County, and as the Taney County and Christian County localities are only about 25 miles east of Galena, Stone County, it may be said that they are the same general region as the Benton County locality.

8A. *VIBURNAM MOLLE* FORMA *LEIOPHYLLUM* Rehder,  
Journ. Arn. Arboretum 5: 57. 1924.

South central Missouri, apparently very local.

*SPECIMENS EXAMINED:*

MISSOURI

Cole Camp Creek, *Trelease* 4, May 19, 1904, U. of Ill. Herb.; Cole Camp Creek, collector not given, according to Rehder, l. c., probably based on Trelease's collection; Galena, *Palmer* 17226, April 17, 1920, A. A. Herb.; Galena, *Palmer* 22816, May 23, 1923, A. A. Herb.; Galena, *Palmer* 23872a, September 24, 1923, A. A. Herb.; Galena, *Palmer* 4671, October 15, 1913, A. A. Herb.; Galena, *Palmer* 5671, May 20, 1914, A. A. Herb.; Noel, *Bush* 5531, April 25, 1909, A. A. Herb.; Noel, *Bush* 5763, May 27, 1909, A. A. Herb.; Swan, *Bush*,<sup>11</sup> 798, October 9, 1899, A. A. Herb.; Swan, *Sargent*,

9. *VIBURNUM DEAMII* (Rehder) n. sp.

*V. pubescens Deamii* Rehder, Journ. Arnold Arboretum 5: 58. 1924. A species apparently confined to the Ohio River Basin.

*SPECIMENS EXAMINED:*

INDIANA

Bloomington, *Deam* 35813, May 20, 1922, D. Herb.; Chestnut Ridge, *Deam* 38619, June 18, 1923, D. Herb.; Fairview, *Deam* 40040, October 13, 1923, D. Herb.; Helmsburg, *Deam* 11149, June 16, 1912, D. Herb.; Helmsburg, *Deam* 38950, July 4, 1923, D. Herb.; Helmsburg, *Deam* 11148, June 16, 1912, D. Herb.; Helmsburg, *Deam*, 12217, August 25, 1912, D. Herb.; Helmsburg, *Deam* 1147, June 16, 1912, D. Herb.; October 9, 1899, A. A. Herb.; Swan, *Bush* 3449, September 26, 1905, A. A. Herb.; Swan, *Bush* 4586, May 20, 1907, A. A. Herb.

<sup>11</sup> The specific form, *V. molle*, was found along the rocky banks of Billiu Creek, just north of the Taney County line, in Christian County, about five miles north of the locality at Swan, Missouri, and along the same creek where *V. molle leiophyllum* was found.



Henryville, *Deam* 7580, September 24, 1910, D. Herb.; Henryville, *Deam* 12251, August 30, 1912, D. Herb.; Lake, *Deam* 37505, August 10, 1922, D. Herb.; Lake, *Deam* 39951, October 2, 1923, D. Herb.; Lake, *Deam* 39952, October 2, 1923, D. Herb.; Madison, *Deam* 18848, September 9, 1915, D. Herb.; San Jacinto, *Deam* 38595, May 30, 1923, D. Herb.; San Jacinto, *Deam* 38598, May 30, 1923, D. Herb.; San Jacinto, *Deam* 38878, June 16, 1923, D. Herb.; San Jacinto, *Deam* 38107, September 27, 1922, D. Herb.; Saint Meinard, *Deam* 16541, June 28, 1915, D. Herb.; Scipio, *Deam* 12030, August 13, 1912, D. Herb.

9A. *VIBURNUM DEAMII CANBYI* (Rehder) n. comb.

*V. venosum Canbyi* Rehder, *Rhodora* 6: 60. 1904.

*V. pubescens Canbyi* (Rehder) Blake, *Rhodora* 18: 15. 1918.

Eastern Pennsylvania, Delaware and Virginia.

Pennsylvania and Delaware to the mountains of Virginia, according to Robinson and Fernald in *Manual*, 1908, evidently referring to the collections of Canby and Small as cited below. I have not been able to see any authentic specimens of this variety, but it is said to differ from *V. Deamii* Bush, and the variety *indianense*, in having pubescent young branchlets. To this form Rehder refers a specimen collected at Mt. Hope, Pennsylvania, June 24, 1901, by Heller. This specimen may or may not belong to *var. Canbyi*, but I have seen one of Heller's specimens collected at Mt. Hope, Pennsylvania, dated June 24, 1901, in Deam's collection, and I take this to be a good example of *V. Deamii indianense*. If I am right in this, and this collection of Heller's is really *var. Canbyi*, then the name *indianense* becomes a synonym of *Canbyi*.

*SPECIMENS CITED:*

DELAWARE

Christiana, *Canby*, August 25, 1902, according to Rehder, l. c. 60; New Castle, *Canby*, July 2, 1902, according to Rehder, l. c. 60; Wilmington, *Canby*, July 2, 1902, according to Rehder, l. c. 60; Wilmington, *Canby*, August 22, 1902, according to Rehder, l. c. 60.



## PENNSYLVANIA

Mt. Hope, *Heller*, June 24, 1901, according to Rehder, l. c. 61; Westchester, *Canby*, October 8, 1902, according to Rehder, l. c. 61.

## VIRGINIA

Southwest Virginia, *Small*, July 16, 1892, according to Rehder, l. c. 61, probably being the form cited by Britton and Brown in Ill. Flora, and by Robinson and Fernald in Manual, under *V. pubescens*.

9B. *VIBERNUM DEAMII INDIANENSE* (Rehder) n. comb.

*V. pubescens indianense* Rehder, Journ. Arnold Arboretum 5: 59. 1924.

Said by Rehder to differ from *V. Deamii Canbyi*, in having stipules on most of the petioles, by which character it agrees with *V. Deamii*. It may be distinguished from *V. dentatum* by the presence of stipules, larger inflorescence, and larger short ellipsoid fruit, that species not having stipules on the petioles, and has smaller subglobose fruit and dense smaller inflorescence.

## SPECIMENS EXAMINED:

## PENNSYLVANIA

Mount Hope, *Heller*, June 24, 1901, D. Herb., apparently the same collection cited by Rehder as belonging to *V. Deamii Canbyi*, but certainly is *V. Deamii indianense*.

## INDIANA

Borden, *Deam* 40022, October 11, 1923, D. Herb.; Brazil, *Deam* 38986, July 7, 1923, D. Herb.; Brazil, *Deam* 39002, September 19, 1923, D. Herb.; Clear Springs, *Deam*, 19046, September 14, 1915, D. Herb.; Grantsbury, *Deam*, 27761, June 7, 1919, D. Herb.; Hagerstown, *Deam* 38163, September 24, 1922, D. Herb.; Hillsboro, *Deam* 36020, May 24, 1922, D. Herb.; Mitchell, *Deam* 18517, September 2, 1915, TYPE, D. Herb.; Morris, *Deam* 10558, May 19, 1912, D. Herb.; Os-good, *Deam* 38874, June 15, 1923, D. Herb.; Rockport, *Deam* 39971, October 4, 1923, D. Herb.; Russellville, *Grimes* 582,

August 14, 1911, U. of Ill. Herb.; Versailles, *Deam* 16119, June 19, 1915, D. Herb.; Versailles, *Deam* 18838, September 9, 1915, D. Herb.

## ILLINOIS

Olney, *Ridgway* 363, August 14, 1919, R. Herb.; Olney, *Ridgway* 1927, September 24, 1922, R. Herb.; Olney, *Ridgway* 1928, September 24, 1922, R. Herb.

10. *VIBURNUM SCRABRELLUM* (T. & G.) Chapm. Fl. S. States, 172. 1860.

*V. dentatum* B ? *scrabellum* T. & G. Fl. N. Am. 2: 16, 1841.

*V. dentatum* B *semitomentosum* Michx. Fl. Bor. Am. 1: 179. 1903.

*V. molle* A. Gray, Man. ed. 5, 206. 1867, and authors, not *V. molle* Michx. 1803.

*V. molle* var. ? *tomentosum* Chapm. Fl. S. States, ed 3, 190. 1897.

*V. semitomentosum* (Michx.) Rehder, *Rhodora* 6: 59. 1904.

This species ranges from North Carolina to Florida, west to Texas, mostly along the coast.

Pennsylvania, according to Blake, l. c. 1918, but evidently referring to one of the other of Canby's or Heller's collections. This species does not get so far north as Pennsylvania or Indiana, and it is probable that Blake saw specimens of *V. Deamii* Canbyi, or *V. Deamii indianense* and took them to be *V. scabrellum*.

Pennsylvania to Florida and Texas, according to Small in Flora, 1913, but evidently referring to the same collections that Blake mentioned.

Rehder states that this species occurs in Kentucky, but no specimens have been seen from so far north as that State.

11. *VIBURNUM ASHEI* Bush, Am. Mid. Naturalist 9: July, 1924.

Mississippi and probably in adjoining States along the coast. In foliage this species strongly resembles *V. affine* Bush, but is clearly allied to *V. scabrellum* Chapman, by its

fruit, and indeed it may be an extreme form of that species, although the smaller fruit, smaller inflorescence, smaller and thinner leaves and particularly the glabrous twigs, leaves and cymes, seem sufficient to recognize it as a species.

*SPECIMENS EXAMINED:*

MISSISSIPPI

Little Obolo-Chitto River, Pearl County, TYPE, *Ashe*, A. Herb.; along the Pascagoula River, George County, *Ashe*, A. Herb.; along the Tallahoma River, Jones County, *Ashe*, A. Herb.; along the Chickasawhay River, near Leakesville, Greene County, *Ashe*, A. Herb.

LIS

pla  
cut  
sea  
tha  
tha  
are  
dis  
Th  
du  
mo  
vis  
are  
Inc  
aw  
du  
ha  
of  
lis  
be

ba  
of

Bo

Ch

(the

LIST OF FLOWERING PLANTS AND FERNS IN THE  
DUNES STATE PARK AND VICINITY,  
PORTER COUNTY, INDIANA.

MARCUS WARD LYON, JR.,

South Bend, Ind.

In 1922, I made a small collection of the more conspicuous plants in the dunes region of Porter County, chiefly as an outdoor pastime on Sundays and holidays. After the first season I became more interested in the flora of the region so that during the five years that I have frequented it I feel that I have collected a fair representation of the plants of the area. The resulting collection numbers about 2000 specimens, distributed among over 780 different species or named forms. This number scarcely exhausts the flora of the region for during the fifth season it was not unusual to find one or more previously unnoticed forms on the week-ends that I visited it. Although several authors\* have dealt with this area to point out the interesting floral characteristics of the Indiana dunes of Lake Michigan, yet no one so far as I am aware has published a list of all the plants, native or introduced, of the dune area of Porter County as a whole. Time has been lacking to search literature for published records of Porter County plants. With a few exceptions noted in the list, the specimens are all in the writer's herbarium and have been collected by him.

The classification and plant names used in this paper are based on those found in Britton and Brown's *Illustrated Flora of the Northern United States, Canada and the British Pos-*

---

\* Cowles, H. C., *Physiographic Ecology of Chicago and Vicinity*. Bot. Gaz., 31.

Cowles, H. C., *Plant Societies of Chicago and Vicinity*, Geogr. Soc., Chicago, Bull. 2.

Coulter, Stanley, *Catalogue of the Flowering Plants, Ferns and their Allies indigenous to Indiana*.

Downing, E. R., *A Naturalist in the Great Lakes Region*, 1922.

sessions, second edition; in House's Annotated List of the Ferns and Flowering Plants of New York State, 1924; and in Deam's Trees of Indiana and Shrubs of Indiana.

Dr. J. A. Nieuwland has kindly called to my attention a few names apparently perfectly valid for some genera or at least groups of plants to which other names are commonly assigned. After seeing the original publication of the names I have adopted them feeling confident that they will stand as valid under rules of nomenclature as efficient and as open to as little controversy as those employed by zoologists.

Common names have been given for nearly all the species, being based mainly on those in Britton and Brown's Illustrated Flora, although many of these names are extremely artificial and more or less meaningless.

The area under consideration is the northern strip of Porter County from the right of way of the Chicago, South Shore, and South Bend Railway north to the waters of Lake Michigan; from Tamarack Station on the east to the station known as Wilson or Dune Park on the west. It is approximately ten miles in length from east to west and about one or slightly more miles in width from south to north. Most of the collecting has been done in or near the new Dunes State Park.

During the five years that I have visited the region I have been impressed with the fact that its flora has undergone a few changes and is destined to undergo many more in the future. These changes are dependent upon the destruction of the original flora by fire, clearing, artificial drainage, and that more or less natural drainage which is slowly occurring in the lake region. Pasturage is another factor aiding in the destruction of the original flora. Another factor changing it is the introduction of foreign plants, mainly ordinary weeds of old world origin which are ubiquitous, and in part, native plants. The newcomers follow in along the roadways leading from the Dunes Highway to Lake Michigan and along the roads and trails that traverse the more frequented portions of the region.

For the sake of fixing definitely the localities mentioned

in the list the following brief account of the topography of the region is given.

**Foredunes.** These are low wind blown piles of sand immediately back of the high water mark of Lake Michigan, parallel with the water line. Vegetation on them is not abundant in kind or in amount, but is not inconspicuous. The most characteristic plants are Sand Reed Grass, *Calamovilfa longifolia magna*; Maram Grass, *Ammophila arenaria*; Sand-Cherry, *Prunus pumila*; Wormwood, *Artemesia caudata* and *A. canadensis*.

**Wooded Dunes.** These are the characteristic dunes of the region. They are immediately back of the foredunes, ranging in height from 50 to 150 feet above the lake surface. They are covered with an abundant permanent vegetation. According to the predominance of certain plants on them and according to their proximity to the lake the wooded dunes may be roughly divided into a lakeward portion characterized by such plants as White Pine, *Leucopitys strobus*; Jack Pine, *Pinus banksiana*; Juniper, *Juniperus communis*; Red Cedar, *Juniperus virginiana*; Red Osier Dogwood, *Cornus stolonifera*, Aromatic Sumac *Schmaltzia arenaria*; Fox Grape, *Vitis vulpina*; Basswood, *Tilia americana*; Hop Tree, *Ptelea trifoliata*; Choke Cherry, *Prunus virginiana* and some Black and White Oaks, *Quercus velutina* and *Q. alba*; and into a landward portion where the oaks predominate; where there is an abundant floor shrub of Blueberry, *Vaccinium vacillans*, much Witch Hazel, *Hamamelis virginiana*; and a carpet of Pennsylvania Sedge, *Carex pennsylvanica*. The two portions are not sharply defined. The lakeward portion of the dunes is rather uniform in height, 50 to 60 feet above the lake. The vegetation on their north or lake face blends in with that of the foredunes and contains characteristic plants such as Beard Grass, *Andropogon scoparius*; Wild Rye, *Elymus canadensis*; Bugseed, *Coryspermum hyssopifolium*; Gillman's Goldenrod, *Solidago Gillmani*. The landward portions of the wooded dunes vary considerably in height from low open hills and ridges far inland to hills having a height of 100 to 150 feet nearer Lake Michigan. Some of these wooded dunes, particularly the higher ones near Tremont and within the

State Park, support a very luxuriant vegetation. I have designated them as Rich Wooded Dunes. On them are found such plants as Christmas Fern, *Polystichum acrostichoides*; Maiden Hair Fern, *Adiantum pedatum*; Bellwort, *Uvularia grandiflora*; Wakerobin, *Trillium grandiflorum*; Wild Lily-of-the-Valley, *Uniflorum canadense*; Yellow Lady Slipper, *Cypripedium parviflorum*; Long-Bracted Orchid, *Coeloglossum bracteatum*; White Baneberry, *Actea alba*; Blue Cohosh, *Caulophyllum thalictroides*; Bloodroot, *Sanguinaria canadensis*. The rich wooded dunes support a flora which in many respects resembles that of the moist subdunal woods. It is interesting to see the two floras separated by dry dunes.

*Blowouts.* At various places the wind has worn deep cuts into the first line of wooded dunes, blowing back the sand, leaving a gentle slope toward the lake and a steep slope inland. The flora in the blowouts on the lake face and margins is more or less like that of the foredunes and exposed portions of the first line of wooded dunes. The tops of the blowouts are the only high moving dunes in the region.

*Interdunal Meadows and Ponds.* These are open treeless stretches between the wooded dunes and mostly toward the landward side. They may occur as permanent meadows, or permanent shallow ponds, or meadows which early in the season were shallow ponds. Often some of the meadows become very dry. The ponds are seldom over knee deep. Around the edges of the permanent or temporary ponds there is usually more or less meadow. Westward of Tamarack Station of the South Shore Line are several of these ponds. Opposite Mineral Springs Station was formerly a very interesting pond known as Little Lake.\* It has recently been drained and made into a golf course. West of what was formerly Little Lake is a much larger one known as Walker Lake.

*Subdunal Area.* Between the tracks of the South Shore Line and the dunes proper is an extensive area of low ground, only a few feet above the level of Lake Michigan. Most of this subdunal area is treeless and constitutes quite a

\* Rand McNally's Map of Indiana Dunes, P. S. Goodman, 1920.



marsh, particularly to the east of Tremont. The edge of the subdunal area bordering the dunes may constitute a wet woods or thicket, or less often, it is marshy without trees right to the low open wooded dunes. Near Tremont there is almost a continuous woods from the edge of the dunes to the South Shore tracks. At Keiser and Tamarack stations there are fine subdunal woods adjacent to the railroad. Much of these woods is wet particularly early in the season. These Keiser and Tamarack woods are separated from the dunes proper by the great subdunal marsh. The subdunal woods opposite Mineral Springs station form the very interesting Cowles' tamarack swamp, the only place in the region where are found Showy Lady Slipper, *Cypripedium reginae*; Small White Lady Slipper, *C. candidum*; Yellow Birch, *Betula lutea*; Twin Flower, *Linnaea borealis americana*, and the Dwarf Cornel or Dogwood, *Cynoxylon canadense*. Just south of and bordering the tamarack swamp is the Mineral Springs quaking bog, the only station in the region where are found Arrow Grass, *Triglochin maritima*; Hoary Willow, *Salix canescens*; Pitcher Plant, *Sarracenia purpurea*; Loosetrife, *Decodon verticillatus*; Grass of Parnassus, *Parnassia caroliniana*; Small Fringed Gentian, *Gentiana procera*.

*Dune Creek.* This is a small sluggish stream draining part of the subdunal area and emptying into Lake Michigan at Waverly Beach, Tremont. Much of its course is in the open, but around Tremont it flows through rich subdunal woods. At its mouth is a small flat delta. At Tremont it receives a tributary from the west.

In the case of plants which are more or less ubiquitous in the region under consideration as determined by observation or by several collected specimens no special localities are mentioned in the following list. In the case of more interesting or unusual plants, definite localities are mentioned using the names of the nearest station of the South Shore Line or such well known landmarks as Little Lake (now obliterated), Walker Lake and Dune Creek.

I am deeply indebted to many persons for assistance in preparing this list. Mr. Charles C. Deam has been most kind in naming plants for me as well as in advising me as

to localities to visit. Rev. J. A. Nieuwland has given similar aid. Dr. Carleton R. Ball has identified all the willows; Prof. A. S. Hitchcock, all the grasses; Mr. Kenneth K. Mackenzie, all the sedges of the genus *Carex*; Dr. S. F. Blake has looked over all the asters, goldenrods, and antennarias; Prof. T. G. Yuncker has named the dodders; Mr. W. R. Maxon has identified several of the ferns and allies; Prof. Paul Weatherwax has kindly furnished one record of a grass hitherto unrecorded from Indiana. I have also to thank Dr. and Mrs. W. D. Richardson, Capt. C. H. Robinson, and other habitués of the dunes for information as to the place of occurrence of interesting plants. I finally have to thank my wife, Dr. Martha Brewer Lyon, who has accompanied me on nearly every collecting trip and aided in the finding of plants and taking care of them.

*Botrychium obliquum* Muhl., Ternate Grape-fern, subdunal woods and wooded dunes, Tremont.

*Botrychium dissectum* Spreng., Cut-leaved Grape-fern, rich subdunal woods, Tamarack.

*Botrychium virginianum* (L.), Virginia Grape-fern, moist subdunal woods, Tremont, Keiser.

*Osmunda regalis* L., Royal Fern, subdunal marsh, open subdunal woods, edges interdunal ponds.

*Osmunda cinnamomea* L., Cinnamon-fern, wet subdunal woods.

*Osmunda claytoniana* L., Clayton's Fern, edge subdunal woods, Furnessville, rare.

*Onoclea sensibilis* L., Sensitive Fern, subdunal area, moist open spaces, moist open woods.

*Filix F. [ilix] fragilis* (L.), Brittle Fern, moist subdunal woods.

*Polystichum acrostichoides* (Michx.), Christmas-fern, subdunal woods, Keiser, Tremont; rich wooded dunes, Tremont, Mineral Springs.

*Dryopteris noveboracensis* (L.), New York Fern, subdunal woods, meadows, interdunal meadows.

*Dryopteris thelypteris* (L.), Marsh Shield-fern, subdunal

marsh, Keiser; quaking bog, Mineral Springs; ditch by railroad, Tamarack.

*Dryopteris cristata* (L.), Crested Shield-fern, subdunal woods.

*Dryopteris spinulosa* (Muell.), Spinulose Shield-fern, subdunal woods, Cowles' tamarack swamp; rich wooded dune, Tremont.

*Dryopteris intermedia* (Muhl.), American Shield-fern, tamarack swamp, Mineral Springs.

*Dryopteris hexagonoptera* (Michx.), Broad Beech-fern, subdunal woods, Keiser, Tremont.

*Anchistea virginica* (L.), Virginia Chain-fern, subdunal marsh, edges interdunal ponds; usually in dense stands.

*Asplenium platyneuron* (L.), Ebony Spleenwort, rich wooded dunes, Tremont, rare.

*Athyrium angustum* (Willd.), Northern Lady-fern, subdunal woods, Keiser to Tremont; rich wooded dune, Tremont.

*Adiantum pedatum* L., Maiden-hair Fern, subdunal woods, Keiser to Tremont; rich wooded dunes, Tremont.

*Pteridium aquilinum* (L.), Brake, open wooded dunes and clearings, subdunal fields; very abundant.

*Equisetum arvense* L., Field Horsetail, moist subdunal roadside, Tremont.

*Equisetum hyemale* L., Common Scouring-rush, sides of moving dunes; subdunal wet places.

*Lycopodium lucidulum* Michx., Shining Club-moss, subdunal woods, Keiser; rich wooded dune, Tremont; rare.

*Lycopodium inundatum* L., Bog Club-moss, ditch by railroad, Port Chester; rare.

*Lycopodium obscurum* L., Ground-pine, subdunal woods, Tremont; rare.

*Leucopitys strobus* (L.), White Pine, lake front of high dunes, rich wooded dunes, subdunal woods.

*Pinus banksiana* Lamb., Labrador Pine, Jack Pine, lake front of high dunes, rich wooded dunes, subdunal woods.

*Larix laricina* (DuRoi), Tamarack, subdunal woods at Mineral Springs; formerly also large interdunal pond between Tamarack and Keiser destroyed by fire 1922.

*Thuja occidentalis* L., Arbor Vitae, tamarack swamp, Mineral

Springs, also two or three trees, subdunal woods at Tamarack.

*Juniperus communis* L., Juniper, lake face and top of first line high dunes, exposed places on dunes farther inland.

*Juniperus virginiana* L., Red Cedar, lake face and top first line of high dunes, scattered elsewhere in wooded dunes, and in subdunal woods.

*Typha latifolia* L., Broad-leaved Cat-tail, subdunal marsh, interdunal ponds, common.

*Typha angustifolia* L., Narrow-leaved Cat-tail, subdunal marsh, interdunal ponds, much less common than preceding species.

*Sparganium eurycarpum* Engelm., Broad-fruited Bur-reed, mainly along Dune Creek in marsh, sometimes in wooded portion of creek.

*Potamogeton diversifolius* Raf., Rafinesque's Poundweed, in 18 inches of water, Little Lake.

*Potamogeton* sp. Apparently a different species, not fruiting, interdunal pond near Tamarack.

*Triglochin maritima* L., Seaside Arrow-grass, quaking bog, Mineral Springs.

*Alisma subcordatum* Raf., American Water-plantain, subdunal marsh, mouth of Dune Creek.

*Sagittaria latifolia* Willd., Broad-leaved Arrow-head, subdunal marsh, interdunal ponds; depauperate specimens without flowers or fruit in some interdunal meadows.

*Sagittaria graminea* Michx., Grass-leaved Sagittaria, Little Lake, interdunal ponds, Tamarack; interdunal meadows, Mineral Springs, but not flowering in meadows.

*Andropogon scoparius* Michx., Broom Beard-grass, dry open places, especially first line of high dunes, also inland, common.

*Andropogon furcatus* Muhl., Forked Beard-grass, dry open places chiefly inland from the main dunes.

*Sorghastrum nutans* (L.) Indian Grass, dry open areas, mainly interdunal, inland.

*Digitaria sanguinalis* (L.), Large Crab-grass, weed, interdunal and subdunal clearings and fields.

- Leptoloma cognatum* (Schultes), Diffuse Crab-grass, subdunal roadside, Keiser.
- Echinochloa Crusgalli* (L.), Barnyard-grass, subdunal open places near roads, not yet common but increasing in numbers.
- Panicum capillare* L., Witch-grass, road across marsh, Tamarack.
- Panicum virgatum* L., Switch-grass, dry interdunal meadows; open spaces, wooded dunes.
- Panicum agrostoides* Spreng., Red-top Panic Grass, open woods, moist open places, mainly subdunal.
- Panicum depauperatum* Muhl, Starved Panic Grass, open wooded dune. Tremont.
- Panicum perlongum* Nash, Long-stalked Panic Grass, very open wooded dune, Tremont.
- Panicum mattamuskeetense* Ashe, Clute's Panic Grass, wooded dune, Tremont, specimens in Deam Herbarium and in National Herbarium.
- Panicum dichotomum* L., Forked Panic Grass, wooded dunes, subdunal woods.
- Panicum spretum* Schultes, Eaton's Panic Grass, interdunal meadows, subdunal by railroad ditch, Mineral Springs.
- Panicum meridionale* Ashe, Matting Panic Grass, edge low wooded dune, Baileytown; subdunal by railroad, Tamarack.
- Panicum huachucae silvicola* Hitchc. and Chase, Hairy Panic Grass, subdunal woods, Tamarack; tamarack swamp, Mineral Springs; wooded dune, Port Chester.
- Panicum tennesseense* Ashe, Tennessee Panic Grass, edge Walker Lake; rather open spot, rich wooded dune, Tremont.
- Panicum pseudopubescens* Nash, dry, very open wooded dune, Mineral Springs.
- Panicum scribnerianum* Nash, Scribner's Panic Grass, wooded dunes, Keiser, Tremont; edge interdunal meadow, Port Chester.
- Panicum oligosanthos* Schult., Few-flowered Panic Grass, rich wooded dune, subdunal meadow, Tremont.
- Panicum clandestinum* L., Deer-tongue Grass, dry open along railroad, Keiser.

- Panicum latifolium* L., Broad-leaved Panic Grass, rather rich wooded dunes, Tremont, Port Chester.
- Chaetochloa viridis* (L.), Green Foxtail-grass, dry open clearings.
- Cenchrus pauciflorus* Benth., Bur-grass, dry open clearings, dry subdunal fields, rather rare.
- Homalocenchrus oryzoides* (L.), Rice Cut-grass, subdunal marsh, Tamarack.
- Homalocenchrus virginicus* (Willd.), White Grass, subdunal woods, Tamarack, Port Chester.
- Phalaris arundinacea* L., Reed Canary-grass, subdunal marsh, Mineral Springs, Tremont.
- Milium effusum* L., Tall Millet-grass, subdunal woods, Keiser.
- "*Oryzopsis pungens* (Torr.), Slender Mountain-rice, along side of a dune about  $\frac{1}{4}$  mile east of Waverly Beach, Dunes State Park. May 22, 1926. Identified by Agnes Chase who credits it with being the first report for Indiana, and the most southern station recorded to date. No. 538." Paul Weatherwax.
- Stipa avenacea* L., Black Oat-grass, open wooded dune, Tremont.
- Stipa spartea* Trin., Porcupine-grass, low, open wooded dunes, Tremont, Mineral Springs.
- Aristida purpurascens* Poir., Arrowgrass, dry subdunal clearings, Furnessville.
- Aristida tuberculosa* Nutt., Sea-beach Triple-awed Grass, open sand of low open wooded dune, Baileytown.
- Muhlenbergia racemosa* (Michx.), Wild Timothy, subdunal meadow and quaking bog, Mineral Springs.
- Muhlenbergia tenuiflora* (Willd.), Slender Satin-grass, rich wooded dune, Tremont.
- Muhlenbergia foliosa* (R. and S.), Wood-grass, subdunal meadow, Port Chester.
- Brachyelytrum erectum* (Schreb.), Bearded Short-husk, moist subdunal woods, Keiser, Furnessville.
- Phleum pratense* L., Timothy, subdunal fields and meadows.
- Sporobolus cryptandrus* (Torr.), Sand Dropseed, sandy subdunal roadside, Baileytown.

- Cinna arundinacea* L., Wood Reed-grass, moist subdunal woods, Keiser, Furnessville.
- Agrostis perennans* (Walt.), Upland Bent-grass, subdunal woods, Tremont, Tamarack.
- Agrostis hyemalis* (Walt.), Rough Hair-grass, subdunal, moist, open, Keiser, Port Chester.
- Agrostis palustris* Huds., Red-top, subdunal, moist, open, Tamarack to Port Chester; wooded dune, Port Chester.
- Calamagrostis canadensis* (Michx.), Blue-joint Grass, subdunal wet places, Mineral Springs, Tamarack.
- Calamagrostis inexpansa* A. Gray, Bog Reed-grass, subdunal marsh, Mineral Springs.
- Calamovilfa longifolia* (Hook.), Long-leaved Reed-grass, low open wooded dune, inland, Port Chester.
- Calamovilfa longifolia magna* Scribn. and Merr., abundant in foredune area and high up in blowouts.
- Ammophila arenaria* (L.), Sea Sand-reed, Marram, foredune area and up into blowouts, less abundant than *Calamovilfa*.
- Avena sativa* L., Oats, interdunal roadway, Mineral Springs.
- "*Danthonia spicata* (L.), Spiked Wild Oat-grass, top of dune nearest lake; about one mile east of Waverly Beach, Dunes State Park, July 11, 1926. Variable in size but often two feet tall. This specimen was first thought to be *D. compressa*, but critical examination by Prof. A. S. Hitchcock shows it to be *D. spicata*. *D. compressa* has not yet been recorded from Indiana. No. 572." Paul Weatherwax.
- Spartina michauxiana* Hitchc., Tall Marsh-grass, subdunal, moist, open, Oak Hill.
- Phragmites communis* Trin., Common Reed-grass, common in patches in subdunal marsh, Tamarack to Mineral Springs.
- Eragrostis caroliniana* (Spreng.), Pursh's Love-grass, dry open, subdunal, Keiser, Tremont.
- Eragrostis pectinacea* (Michx.), Purple Love-grass, very open wooded dune, Mineral Springs.
- Sphenopholis pallens* (Spreng.), Tall Eaton's Grass, subdunal woods, Keiser, Tremont.
- Koeleria cristata* (L.), Koeler's Grass, common, in open wooded dunes.



- Poa annua* L., Dwarf Spear-grass, interdunal road, Mineral Springs.
- Poa palustris* L., subdunal, moist, open, Tamarack, Tremont.
- Poa pratensis* L., Kentucky Blue-grass, open, wooded dunes.
- Poa compressa* L., Wire-grass, open wooded dunes, interdunal meadows.
- Panicularia canadensis* (Michx.), Rattlesnake-grass, subdunal marsh, Tamarack; subdunal woods, Tremont.
- Panicularia nervata* (Willd.), Meadow-grass, subdunal marsh, Keiser; subdunal woods, Tamarack to Mineral Springs.
- Panicularia septentrionalis* (Hitchc.), American Flote-grass, subdunal marsh, Keiser, Furnessville.
- Panicularia borealis* Nash, Northern Manna-grass, subdunal marsh, Tamarack.
- Festuca octoflora* Walt., Slender Fescue-grass, dry open wooded dunes, dry interdunal meadows, Mineral Springs, Tremont.
- Festuca obtusa* Spreng., Nodding Fescue-grass, wooded dune, Tremont; subdunal woods, Keiser.
- Bromus tectorum* L., Downy Brome-grass, dry subdunal, especially along railroad, Tremont.
- Bromus ciliatus* L., Fringed Brome-grass, half shaded outer edge, Mineral Springs, tamarack swamp.
- Bromus purgans* L., Hairy Wood-chess, rich wooded dune, Tremont.
- Bromus kalmii* A. Gray, Kalm's Grass, open wooded dune, Furnessville.
- Bromus secalinus* L., Common Chess, dry subdunal, Keiser.
- Agropyron repens* (L.), Couch-grass, dry subdunal, Keiser.
- Agropyron caninum* (L.), Bearded Wheat grass, rich wooded dunes, Tremont, Mineral Springs.
- Triticum aestivum* L., Wheat, road across marsh at Keiser.
- Elymus virginicus* L., Virginia Wild Rye, wet subdunal woods, Tremont.
- Elymus striatus* Willd., Slender Wild Rye, subdunal woods, Keiser.
- Elymus canadensis* L., Nodding Wild Rye, open portions and Lake face first line of high dunes, Tremont, also sandy subdunal roadside, Baileytown.



- Hystrix hystrix* (L.), Bottle-brush Grass, subdunal woods, Keiser, Tremont.
- Cyperus Schweinitzii* Torr., Schweinitz's Cyperus, dry open places, wooded dunes, subdunal landward side of blowouts, edges interdunal meadows, sandy places, Tamarack to Wilson.
- Cyperus strigosus* L., Straw-colored Cyperus, subdunal, moist open.
- Cyperus filiculmis* Vahl., Slender Cyperus, dry subdunal places, open wooded dunes.
- Eleocharis olivacea* Torr., Bright-green Spike-rush, Walker Lake.
- Eleocharis obtusa* (Willd.), Blunt Spike-rush, subdunal and interdunal, wet, open, Tamarack to Mineral Springs.
- Eleocharis palustris* (L.), Creeping Spike-rush, interdunal ponds, Tamarack to Mineral Springs, quaking bog, Mineral Springs.
- Eleocharis glaucescens* (Willd.), Glaucous Creeping Spike-rush, Dune Creek Mouth.
- Eleocharis acicularis* (L.), Needle Spike-rush, moist subdunal woods, Tremont.
- Fimbristylis puberula* (Michx.), Hairy Fringe-style, interdunal meadow, Port Chester.
- Fimbristylis geminata* (Nees), Low Fringe-style, ditch by railroad, Tamarack.
- Fimbristylis autumnalis* (L.), subdunal marsh, Tamarack; Walker Lake.
- Eriophorum angustifolium* Roth, Tall Cotton-grass, subdunal marsh, Port Chester.
- Eriophorum virginicum* L., Virginia Cotton-grass, subdunal marsh, Port Chester.
- Scirpus debilis* Pursh, Weak-stalked Club-rush, interdunal pond, Tamarack.
- Scirpus Smithii setosus* Fernald, Walker Lake.
- Scirpus americanus* Pers., Chair-makers Rush, Little Lake; subdunal marsh, Mineral Spring.
- Scirpus validus* Vahl., American Great Bulrush, subdunal marsh, Tremont, Mineral Springs, Little Lake.

- Scirpus fluviatilis* (Torr.), River Bulrush, Dune Creek marsh, Tremont.
- Scirpus atrovirens* Muhl., Dark-green Bulrush, subdunal marshy places, Tremont, Mineral Springs.
- Scirpus cyperinus* (L.), Wool-grass, subdunal marsh, interdunal ponds.
- Fuirena squarrosa* Michx., Umbrella-grass, Walker Lake.
- Dulichium arundinaceum* (L.), subdunal marsh, interdunal ponds.
- Rynchospora alba* (L.), White Beaked-rush, quaking bog, Mineral Springs; Little Lake.
- Rynchospora capillacea* Torr., Capillary Beaked-rush, Little Lake.
- Rynchospora glomerata* (L.), Clustered Beaked-rush, wet subdunal meadows, Tremont.
- Rynchospora marcostachya* Torr., Horned-rush, interdunal ponds, Tamarack, Little Lake
- Psilocarya scirpoides* Torr., Long-beaked Bald-rush, Walker Lake, wet interdunal meadow, Tamarack.
- Mariscus mariscoides* (Muhl.), Twig-rush, subdunal marsh, interdunal ponds.
- Scleria reticularis* Michx., Reticulated Nut-rush, Little Lake, Walker Lake.
- Carex convoluta* Mackenzie, subdunal woods, Tremont.
- Carex Muhlenbergii* Schk., Muhlenberg's sedge, open wooded dunes, Keiser to Wilson.
- Carex vulpinoidea* Michx., Fox Sedge, moist open along Dune Creek.
- Carex stipata* Muhl., Awl-fruited sedge, subdunal open places and woods, Keiser to Mineral Springs.
- Carex bromoides* Schk., Brome-like Sedge, wet subdunal woods, Tamarack, Keiser, Tremont.
- Carex interior* Bailey, Inland Sedge, quaking bog, Mineral Springs.
- Carex Howei* Mackenzie, Howe's Sedge, subdunal woods, Mineral Springs.
- Carex seorsa* E. C. Howe, wet subdunal woods, Keiser.
- Carex scoparia* Schk., Pointed Broom Sedge, subdunal meadow, Keiser, interdunal meadow, Mineral Springs.

- marsh,  
subdunal  
inter-  
ke.  
erdunal  
g bog,  
Little  
et sub-  
rdunal  
Walker  
marsh,  
Lake,  
wooded  
Dune  
places  
rdunal  
ineral  
Min-  
mead-
- Carex cristatella* Britton, Crested Sedge, wet subdunal meadow, Tremont.  
*Carex normalis* Mackenzie, Larger Saw Sedge, subdunal moist open, Tremont.  
*Carex brevior* (Dewey), Wilson, dry open.  
*Carex alata* Torr., Broad-winged Sedge, moist open subdunal, Keiser.  
*Carex pennsylvanica* Lam., Pennsylvania Sedge, wooded dunes, common and characteristic.  
*Carex tetanica* Schk., Wood's Sedge, subdunal bog, Mineral Springs.  
*Carex laxiculmis* Schw., Spreading Sedge, subdunal woods, Tremont.  
*Carex blanda* Dewey, Woodland Sedge, wet subdunal meadow, Tremont.  
*Carex gracilescens* Stand., open subdunal woods, Tremont.  
*Carex heterosperma* Wahl., subdunal woods, Keiser.  
*Carex granularis* Muhl., Meadow Sedge, wet subdunal meadow, Tremont.  
*Carex grisea* Wahl., Gray Sedge, wet subdunal meadow, Tremont.  
*Carex gracillima* Schw., Graceful Sedge, subdunal woods and meadow, Keiser.  
*Carex flexuosa* Muhl., Slender-stalked Sedge, subdunal woods, Tremont.  
*Carex Swanii* (Fernald), Swan's Sedge, subdunal meadows, woods, interdunal meadows, Tamarack to Tremont.  
*Carex aquatilis* Wahl., Water Sedge, subdunal marsh, Keiser.  
*Carex crinita* Lam., Fringed Sedge, subdunal woods and marsh, Tamarack to Tremont.  
*Carex lacustris* Willd., Lake-bank Sedge, subdunal marsh, Keiser.  
*Carex lanuginosa* Michx., Woolly Sedge, interdunal meadows, Tremont; open subdunal woods, Mineral Springs.  
*Carex cryptolepis* Mackenzie, subdunal ditch, Keiser.  
*Carex folliculata* L. Long Sedge, subdunal woods and marsh.  
*Carex lurida* Wahl., Sallow Sedge, subdunal wet meadows, Tamarack to Tremont.

- Carex intumescens* Rudge, Bladder Sedge, subdunal wet meadows, and woods, Tamarack to Tremont.
- Carex Asa Grayi* Bailey, Gray's Sedge, wet subdunal woods, Tremont.
- Carex lupulina* Muhl, Hop Sedge, subdunal marsh and wet woods, Keiser, Furnessville.
- Arisaema triphyllum* (L.), Jack-in-the-pulpit; rather common in subdunal woods, less frequent in rich wooded dunes.
- Arisaema dracontium* (L.), Green Dragon, moderately frequent, subdunal woods, Tremont, not seen elsewhere.
- Peltandra virginica* (L.), Green Arrow-arum, swampy subdunal woods, Tremont, rare.
- Acorus calamus* L., Sweet Flag, subdunal marsh; Dune Creek mouth.
- Spathyema foetida* (L.), Skunk Cabbage, wet subdunal woods, abundant.
- Spirodela polyrhiza* (L.), Greater Duckweed, shallow water subdunal ponds, ditches. On September 6, 1926, great quantities of this duckweed were blown and washed ashore along the lake front for several miles near Tremont.
- Lemna minor* L., Lesser Duckweed, interdunal pond, Tamarack.
- Xyris flexuosa* Muhl., Slender Yellow-eyed Grass, ditch by railroad, Tamarack, Keiser; Little Lake.
- Eriocaulon septangulare* With., Seven-angled Pipewort, edges of Little Lake and Walker Lake.
- Commelina communis* L., Asiatic Day-flower, found once by Dune Creek, near road, not seen next season.
- Commelina longicaulis* Jacq, *teste* Deam, very open wooded dune along edge of meadow, dry sand, Port Chester, rare.
- Tradescantia reflexa* Raf., Reflexed Spiderwort, very open wooded dunes, and in open places, mainly inland.
- Pontederia cordata* L., Pickerel-weed, Little Lake; interdunal pond at Tamarack.
- Juncus effusus* L., Common Rush, moist subdunal areas, edges interdunal ponds.
- Juncus tenuis* Willd., Slender Rush, along paths and roads, subdunal woods.

- Juncus pelocarpus* E. Meyer, Brown-fruited Rush, Walker Lake.
- Juncus canadensis* J. Gay, Canada Rush, Little Lake, interdunal meadow, Tamarack.
- Juncus acuminatus* Michx., Sharp-fruited Rush, subdunal wet open places, Tremont, Keiser.
- Juncoides intermedium* (Thuill.), Common Wood-rush, subdunal woods.
- Allium tricoccum* Ait., Wild Leek, subdunal woods, Tremont, Keiser.
- Allium canadense* L., Meadow Garlic, subdunal woods.
- Lilium umbellatum* Pursh., Western Red Lily, a few dozen plants in an interdunal meadow at Port Chester.
- Lilium superbium* L., Turk's Cap Lily, subdunal moist open places, subdunal woods, Keiser to Mineral Springs.
- Aletris farinosa* L., Star-grass, interdunal and subdunal meadows, Port Chester, Mineral Springs.
- Asparagus officinalis* L., Asparagus, along railroad and subdunal roads.
- Vagnera racemosa* (L.), Wild Spikenard, subdunal woods and wooded dunes, common.
- Vagnera stellata* (L.), Star-flowered Solomon's Seal, wooded dunes including top of first line, also in subdunal woods.
- Unifolium canadense* (Desf.), Wild Lily-of-the-Valley, subdunal woods, also rich wooded dunes.
- Uvularia grandiflora* J. E. Smith, Large-flowered Bellwort, rich wooded dunes, Tremont; subdunal woods, Keiser, Furnessville.
- Polygonatum biflorum* (Walt.), Hairy Solomon's Seal, subdunal woods and wooded dunes.
- Polygonatum commutatum* (R. and S.), Smooth Solomon's Seal, subdunal woods and wooded dunes.
- Medeola virginiana* L., Indian Cucumber-root, subdunal woods.
- Trillium recurvatum* Beck, Prairie Wake-robin, subdunal woods, Keiser, Tremont; rich wooded dune, Tremont.
- Trillium grandiflorum* (Michx.) Large-flowered Wake-robin, subdunal woods, except tamarack swamp, also rich wooded dunes.

- Trillium declinatum* (A. Gray), Drooping Wake-robin, subdunal woods, Tremont, Keiser, rare.
- Smilax herbacea pulverulenta* (Michx.), Carrion-flower, subdunal woods, Tremont.
- Smilax ecirrhata* (Engelm.), Upright Smilax, subdunal woods, rich wooded dunes, Keiser, Tremont.
- Smilax rotundifolia* L., Greenbrier, subdunal woods, Tremont.
- Smilax hispida* Muhl., wooded dunes, including lake face, Tremont.
- Hypoxis hirsuta* (L.), Yellow Star-grass, one plant in an interdunal meadow at Port Chester.
- Dioscorea villosa* L., Wild Yam-root, subdunal woods and thickets, Tremont.
- Iris versicolor* L., Larger Blue-flag, subdunal and interdunal open marshy places, occasionally in subdunal woods.
- Sisyrinchium albidum* Raf., Pale Blue-eyed Grass, low open wooded dune, inland, Baileytown.
- Sisyrinchium graminoides* Bicknell, Stout Blue-eyed Grass, subdunal woods, Tremont, Mineral Springs.
- Sisyrinchium atlanticum* Bicknell, Eastern Blue-eyed Grass, edge subdunal woods, Mineral Springs.
- Cypripedium reginae* Walt., Showy Ladies' Slipper, outer edge tamarack swamp, Mineral Springs.
- Cypripedium candidum* Willd., Small White Ladies' Slipper, outer edge tamarack swamp, Mineral Springs.
- Cypripedium parviflorum* Salisb., Yellow Ladies' Slipper, subdunal woods, Tremont, Furnessville; rich wooded dunes, Port Chester, Tremont.
- Cypripedium acaule* Ait., Moccasin Flower, outer edge, tamarack swamp, Mineral Springs; subdunal woods (not wet areas) Tamarack, rather rare.
- Perularia flava* (L.), Small pale-green Orchid, wet subdunal woods, Keiser.
- Coeloglossum bracteatum* (Willd.), Long-bracted Orchid, rich wooded dunes, Tremont.
- Gymnadeniopsis clavellata* (Michx.), Small Green Wood Orchid, subdunal woods, Tamarack, ditch by railroad, Port Chester, rare.

- Limnorchis hyperborea* (L.), Tall Leafy Green Orchid, tamarack swamp, Mineral Springs, found but once.
- Blepharoglottis lacera* (Michx.), Ragged Orchid; subdunal woods, Keiser; interdunal meadow, Port Chester; ditch by railroad, Tamarack, rather rare.
- Blepharoglottis ciliaris* (L.), Yellow-fringed Orchid, locally common for about 1000 feet along the dune edge of the subdunal marsh, Port Chester; rare in an interdunal meadow, Port Chester, a few plants in ditch by railroad, Port Chester.
- Blepharoglottis psychodes* (L.), Purple-fringed Orchid, wet subdunal woods, Tremont, Keiser.
- Triphora trianthophora* (Sw.), Nodding Pogonia, subdunal woods, Tremont, found once.
- Limnorum tuberosum* L., Grass-pink; subdunal marsh, Mineral Springs and Port Chester; interdunal meadow, Port Chester; ditch by railroad, Tamarack, rather rare, but locally common at Mineral Springs.
- Ibidium cernuum* (L.), Nodding Ladies' Tresses, interdunal and subdunal meadows and marshes, common.
- Ibidium gracile* (Bigel.), Slender Ladies' Tresses, interdunal and subdunal meadows, Port Chester, much less frequent than preceding species.
- Peramium pubescens* (Willd.), Downy Rattlesnake Plantain rich wooded dunes, Tremont, rather rare.
- Liparis liliifolia* (L.), Large Twayblade, subdunal woods, Keiser, rich wooded dune, Tremont; rare.
- Corallorrhiza maculata* Raf., Large Coral-root, subdunal woods, Tremont, rather rare.
- Saururus cernuus* L., Lizard's Tail, subdunal woods in wet places, Tamarack, Tremont.
- Juglans nigra* L., Black Walnut, subdunal roadside, Tremont, a few trees, probably planted, doing well and bearing nuts.
- Juglans cinerea* L., Butternut, rich wooded dunes, Tremont not often bearing nuts.
- Carya ovata* (Miller), Shellbark Hickory, subdunal woods, Tremont rare.
- Comptonia peregrina* (L.), Sweet Fern, inland edge subdunal woods, Keiser; rare.



- Populus deltoides* Marshall, Cotton-wood, foredune area.
- Populus gradidentata* Michx., Large-toothed Aspen, wet subdunal woods and wet interdunal places, occasionally on wooded dunes.
- Populus tremuloides* Michx., Quaking Aspen, subdunal and interdunal moist places; common.
- Salix nigra* Marsh, Black Willow, subdunal woods and swamps.
- Salix amygdaloides* Anders, Peach-leaved Willow, subdunal woods and swamps.
- Salix lucida* Muhl., Shining Willow, subdunal and interdunal wet places.
- Salix fragilis* L., Crack Willow, foredune area, Mineral Springs, single specimen.
- Salix interior* Rowlee, Sandbar Willow, foredune area rare; Dune Creek mouth, moderately common.
- Salix glaucophylla* Bebb, Blue-leaved Willow, low inland dunes; subdunal and interdunal places.
- Salix cordata* Muhl. Heart-leaved Willow, moist ground subdunal and interdunal, Mineral Springs.
- Salix adenophylla* Hook., Furry Willow, foredune area, Furnessville, subdunal along railroad, Wilson, not common at either place.
- Salix candida* Fluegge, Hoary Willow, quaking bog at Mineral Springs.
- Salix petiolaris* J. E. Smith, Slender Willow, interdunal meadow, Mineral Springs.
- Salix bebbiana* Sarg., Bebb's Willow, subdunal swamp, Furnessville, Mineral Springs.
- Salix discolor* Muhl., Pussy Willow, subdunal and interdunal moist places.
- Salix discolor eriocephala* Michx., interdunal meadow, Mineral Springs.
- Salix humilis* Marsh, Prairie Willow, interdunal places, occasionally wooded dunes.
- Salix tristis* Ait., Dwarf Gray Willow, dry interdunal places, low open wooded dunes.
- Carpinus caroliniana* Walt., American Hornbeam, subdunal woods, Keiser, Tremont.



*Ostrya virginiana* (Mill.), Hop-hornbeam, rich wooded dunes, rarely on lake face of dune, Tremont.

*Corylus americana* Walt., Hazel-nut, subdunal woods and thickets, Tremont.

*Betula papyrifera* Marsh, Paper Birch, tamarack swamp, Mineral Springs; subdunal field, Keiser; interdunal pond Baileytown; interdunal meadow, Mineral Springs, destroyed by fire 1922; common in tamarack swamp, infrequent elsewhere.

*Betula lutea* Michx., Yellow Birch, tamarack swamp, Mineral Springs.

*Betula pumila* L. Low Birch, outer edge tamarack swamp, Mineral Springs; subdunal swamp, Port Chester.

*Alnus incana* (L.), Speckled Alder, subdunal wet woods, very common.

*Fagus grandifolia* Ehrh., American Beech, subdunal woods, Tremont and eastward.

*Quercus rubra* L., Red Oak, wooded dunes, Tremont.

*Quercus palustris* Du Roi, Swamp Oak,, subdunal swampy woods.

*Quercus velutina* Lam., Black Oak, wooded dunes and subdunal woods, abundant.

*Quercus alba*, L., White Oak, wooded dunes and subdunal places, abundant, but less so than preceding species.

*Quercus bicolor* Willd., Swamp White Oak, subdunal swampy woods, not common.

*Ulmus americana* L., American Elm, subdunal swampy woods, common.

*Ulmus fulva* Michx., Slippery Elm, rich wooded dune, Tremont, small trees.

*Celtis pumila* Pursh, Dwarf Hackberry, first line of wooded dunes, Mineral Springs and westward.

*Urtica gracilis* Ait., Tall Wild Nettle, subdunal roadways, Oak Hill, Tamarack.

*Urticastrum divaricatum* (L.), Wood Nettle, subdunal woods.

*Adicea pumila* (L.), Clearweed, rich subdunal woods, Tamarack. In the herbarium of the University of Notre Dame are the paratypes of *Adicea Deamii* Lunnell, collected in

- the Mineral Springs tamarack swamp by Nieuwland.. All the dune species are probably referable to *A. Deamii*.
- Boehmeria cylindrica* (L.), False Nettle, subdunal woods, Tremont, Mineral Springs.
- Boehmeria cylindrica scabra* Porter, Rough False Nettle, quaking bog, Mineral Springs, rarely in woods.
- Comandra richardsiana* Fernald, Bastard Toad-flax, open wooded dunes, Tremont, rather common.
- Asarum canadense* L., Wild Ginger, subdunal woods, Port Chester, not elsewhere.
- Rumex acetosella* L., Field Sorrel, subdunal fields.
- Rumex verticillatus* L., Swamp Dock, subdunal marsh, Keiser, Furnessville.
- Rumex britannicus* L., Great Water Dock, subdunal marsh, Keiser.
- Rumex crispus* L., Curled Dock, subdunal, dry open, Tremont.
- Rumex obtusifolius* L., Broad-leaved Dock along roads, subdunal woods, Tamarack.
- Tovara virginiana* (L.), Virginia Knotweed, subdunal woods, Tamarack to Tremont.
- Polygonum aviculare* L., Knot-grass, road across marsh, Tamarack.
- Polygonum tenue* Michx., Slender Knot-weed, dry sand just above subdunal marsh, Port Chester.
- Persicaria amphibia* (L.), Water Persicaria, interdunal ponds and meadows, Baileytown, Port Chester, Mineral Springs.
- Persicaria Muhlenbergii* (S. Watson), Swamp Persicaria, subdunal marsh, Keiser, interdunal wet meadows, Baileytown, Mineral Springs.
- Persicaria pennsylvanica* (L.), Pennsylvania Persicaria, interdunal meadow, Mineral Springs.
- Persicaria hydropiperoides* (Michx.), Mild Water Pepper, Little Lake.
- Persicaria punctata* (Ell.), Dotted Smartweed, interdunal meadow, Mineral Springs.
- Tracaulon sagittatum* (L.), Arrow-leaved Tear-thumb, subdunal marsh, Tamarack to Mineral Springs.
- Tracaulon arifolium* (L.), Halberd-leaved Tear-thumb, subdunal woods, Keiser.

- Tiniaria dumetorum* (L.), Copse Buckwheat, subdunal thickets.
- Polygonella articulata* (L.), Coast Jointweed, open wooded dunes.
- Amaranthus retroflexus* L., Green Amaranth, by railroad, Port Chester; rare.
- Chenopodium album* L., Lamb's Quarters, along Dunes Highway, dry and open; Mineral Springs.
- Chenopodium leptophyllum* (Moq.), Narrow-leaved Goosefoot, open wooded dune, Mineral Springs.
- Cycloloma atriplicifolium* (Spreng.), Winged Pigweed, open places, first line wooded dunes.
- Atriplex hastata* L., Halberd-leaved Orache, open subdunal, Mineral Springs; rare.
- Corispermum hyssopifolium* L., Bugseed, lakeface of first line of high dunes, and blowouts.
- Salsola pestifer* A. Nelson, Russian Thistle, low dunes, and exposed places of first line higher dunes, roadsides, common.
- Phytolacca americana* L., Pokeweed, subdunal area at edge of dunes, appearing as a weed in burnt over places; increasing in abundance.
- Mollugo verticillata* L., Carpet-weed, dry subdunal, Tamarack, infrequent.
- Claytonia virginica* L., Spring Beauty, subdunal woods, Keiser to Mineral Springs.
- Alsine media* L., Common Chickweed, subdunal woods, and fields.
- Alsine longifolia* (Muhl.), Long-leaved Stitchwort, subdunal meadow, Mineral Springs.
- Cerastium vulgatum* L., Larger Mouse-eared Chickweed, subdunal fields and meadows.
- Silene stellata* (L.), Starry Campion, subdunal woods, Baileytown.
- Silene latifolia* (Mill.), Bladder Campion, along railroad, Keiser.
- Silene antirrhina* L., Sleepy Catchfly, open wooded dunes, Keiser to Mineral Springs.

- Silene noctiflora* L., Night-flowering Catchfly, subdunal field, Tremont, rare.
- Saponaria officinalis* L., Bouncing Bet, open place of wooded dune, Tremont, one large patch only.
- Brassenia Schreberi* Gmel., Water-shield, interdunal pond, Tamarack; also Little Lake, never found in flower. Late in the wet season of 1924 a few leaves were collected in the mud of an interdunal meadow, Mineral Springs.
- Nymphaea advena* Soland., Large Yellow Pond Lily, interdunal ponds, wet subdunal places, often in wooded portion of Dune Creek, common.
- Castalia odorata* (Dryand.), White Water Lily, many thriving plants in interdunal pond between Keiser and Tamarack; a few leaves found in Little Lake and in an interdunal meadow at Mineral Springs.
- Liriodendron tulipifera* L., Tulip-tree, a frequent tree in subdunal woods and rich wooded dunes.
- Asimina triloba* (L.), Papaw, an occasional shrub or small tree in subdunal woods, Keiser to Tremont; not found fruiting.
- Caltha palustris* L., Marsh Marigold, common in open subdunal woods and pools and wet meadows.
- Coptis trifolia* (L.); Gold-thread, fairly common in Cowles' tamarack swamp, Mineral Springs and in subdunal woods at Tamarack; not found elsewhere.
- Actaea alba* (L.), White baneberry; rather infrequent, subdunal woods, Keiser to Tremont; less frequent, rich wooded dunes.
- Aquilegia canadensis* L., Wild Columbine, common in subdunal woods and on wooded dunes.
- Anemone cylindrica* A. Gray, Long-fruited Anemone, common, open wooded dunes.
- Anemone canadensis* L., Canada Anemone, subdunal meadow, Tremont, found once.
- Anemone quinquefolia* L., Wind-flower, subdunal woods, rarely in meadow; common.
- Hepatica hepatica* (L.), Round-lobed Hepatica, common, rich wooded dunes, and subdunal woods.

- Hepatica acutiloba* DC., Sharp-lobed Hepatica, rare, subdunal woods, Tremont, Port Chester.
- Syndesmon thalictroides* (L.), Rue-Anemone, fairly common subdunal woods.
- Ranunculus delphinifolius* Torr., Yellow Water Buttercup, slow flowing water of Dune Creek, not common.
- Ranunculus abortivus* L., Kidney-leaved Buttercup, subdunal wet woods.
- Ranunculus sceleratus* L., Celery-leaved Buttercup, subdunal marsh, Keiser; interdunal pond, Oak Hill.
- Ranunculus recurvatus* Poir, Hooked Buttercup, wet subdunal woods.
- Ranunculus pennsylvanicus* L., Bristly Buttercup, subdunal marsh, Furnessville.
- Ranunculus hispidus* Michx., Hispid Buttercup, subdunal woods and open places.
- Thalictrum dioicum* L., Early Meadow-rue, rich wooded dunes, Tremont, Port Chester.
- Thalictrum polygamum* Muhl., Late Meadow-rue, subdunal meadows, less often subdunal woods.
- Clematis virginiana* L., Virginia Clematis, subdunal thickets.
- Caulophyllum thalictroides* (L.), Blue Cohosh, subdunal woods, Keiser to Port Chester, not common; less frequent on rich wooded dunes.
- Podophyllum peltatum* L., May Apple, common in large patches, subdunal woods, also on rich wooded dunes.
- Menispermum canadense* L., Canada Moonseed, subdunal woods and thickets, Keiser to Tremont, not common, not found in flower or fruit.
- Sassafras sassafras* (L.), Sassafras, common trees of wooded dunes.
- Benzoin aestivale* (L.) Spice bush, subdunal woods.
- Sanguinaria canadensis* L., Bloodroot, rich wooded dunes, and subdunal woods, Tremont, rather infrequent, not found elsewhere.
- Radicula palustris* (L.), Yellow Water-cress, subdunal wet places, Keiser to Mineral Springs.
- Sisymbrium Nasturtium [aquaticum]* L., Water-cress, tamarack swamp, Mineral Springs, rare.

- Lepidium campestre* (L.), Field Cress, open wooded dune, by roadside, Mineral Springs; single specimen.
- Lepidium virginicum* L., Wild Pepper-grass, subdunal fields, common; roads thru woods and wooded dunes, less frequent.
- Norta altissima* (L.), Tall Sisymbrium, road thru open woods, Tremont, rare.
- Barbarea barbarea* (L.), Yellow Rocket, road across marsh, Keiser, rare.
- Arabis lyrata* L., Lyre-leaved Rock-cress, common and characteristic plant of open wooded dunes.
- Arabis glabra* (L.), Tower Mustard, wet subdunal meadow, Mineral Springs.
- Arabis levigata* (Muhl.), Smooth Rock-cress, subdunal woods, infrequent.
- Arabis canadensis* L., Sickie-pod, rather rich wooded dunes, including first line, Tremont, fairly common and characteristic.
- Cardamine pennsylvanica* Muhl., Pennsylvania Bitter Cress, subdunal wet open, Keiser, Mineral Springs.
- Cardamine Douglassii* (Torr.), Purple Cress, wet subdunal woods, Keiser, abundant in places.
- Cardamine bulbosa* (Schreb.), Bulbous Cress, subdunal wet areas, open and wooded places, Keiser to Mineral Springs.
- Dentaria laciniata* Muhl., Cut-leaved Toothwort, subdunal woods, Keiser, infrequent, not seen elsewhere.
- Cakile edentula* (Bigel.), Sea Rocket, lake shore, fore dunes, blowouts, not common.
- Polanisia graveolens* Raf. Clammy Weed, dry subdunal roadside, Baileytown, not seen elsewhere.
- Sarracenia purpurea* L., Pitcher-plant, quaking bog, Mineral Springs not common, not found elsewhere.
- Drosera rotundifolia* L., Round-leaved Sundew, ditch by railroad, Tamarack and Port Chester, rare.
- Drosera intermedia* Hayne, Spatulate-leaved Sundew, once very abundant along edge of Little Lake; also found at Walker Lake; one season at an interdunal pond between Tamarack and Keiser, but destroyed by fire in 1922.

- Penthorum sedoides* L., Ditch Stonecrop, subdunal marsh, Keiser, Dune Creek mouth.
- Parnassia carolina* Michx., Carolina Grass-of-Parnassus, wet subdunal bog, Mineral Springs, common there, not found elsewhere.
- Micranthes pennsylvanica* (L.), Swamp Saxifrage, common in wet subdunal woods and meadows, occasionally interdunal meadows.
- Heuchera hispida* Pursh, Rough Alum-root, wooded dunes, rather rare.
- Mitella diphylla* L., Two-leaved Bishop's Cap, subdunal woods, not infrequent Tamarack to Tremont, rare on rich wooded dunes, Tremont.
- Chrysosplenium americanum* Schwein, Water Carpet, rather common in pools of subdunal woods, Tamarack to Tremont.
- Hamamelis virginiana* L., Witch Hazel, very common and characteristic shrub of the wooded dunes.
- Hamamelis virginiana orbiculata* Nieuwland, type from Tamarack, and paratype from Mineral Springs, in Nieuwland Herbarium.
- Ribes vulgare* Lam., Common Currant, edge subdunal woods, Tremont found once.
- Ribes americanum* Mill., Wild Black Currant, subdunal woods, fairly common.
- Ribes americanum mesochora* Nieuwland, type and paratype from Mineral Springs, tamarack swamp, in Nieuwland Herbarium.
- Grossularia Cynosbati* (L.), Wild Gooseberry, subdunal woods and rich wooded dunes.
- Platanus occidentalis* L., Sycamore, along Dune Creek, and eastward in subdunal woods.
- Physocarpus opulifolius* (L.), Ninebark, moist subdunal thickets, occasionally interdunal.
- Spiraea alba* DuRoi, Meadow Spirea, subdunal and interdunal meadows.
- Spiraea tomentosa* L., Hardhack, subdunal and interdunal meadows, more abundant than preceding species.
- Tridophyllum montepeliensis* (L.), Rough Five-finger, sub-

dunal marsh and meadow, occasionally interdunal and on wooded dunes.

*Potentilla canadensis* L., Five-finger, subdunal fields, small plants, more hairy; subdunal woods, tall slender plants, less hairy; both forms common.

*Potentilla argentea* L., Silvery Five-finger, dry open subdunal sand, Keiser, rare.

*Potentilla recta* L., Rough-fruited Five-finger, interdunal meadow, Wilson; subdunal field, Tamarack.

*Comarum palustre* L., Purple Five-finger, subdunal marsh, Tamarack, Furnessville.

*Fragaria grayana* Vilmorin, Gray's Strawberry, subdunal and interdunal meadows; wooded dunes.

*Agrimonia gyrosepala* Wallr., Tall Hairy Agrimony, subdunal woods.

*Agrimonia parviflora* Soland, Many-flowered Agrimony, moist open subdunal places, much more common than preceding species.

*Geum virginianum* L., Rough Avens, subdunal woods, Tremont.

*Geum canadensis* Jacq., White Avens, subdunal woods, Keiser to Mineral Springs.

*Rubus occidentalis* L., Common Blackcap Raspberry, subdunal, Keiser.

*Rubus idaeus strigosus* (Michx.), Common Red Raspberry, subdunal woods, Keiser, Tremont.

*Rubus pubescens* Raf., Dwarf Red Blackberry, subdunal woods, Tamarack to Mineral Springs.

*Rubus hispidus* L., Swamp Dewberry, subdunal woods, Mineral Springs.

*Rubus flagellaris* Willd., Northern Dewberry, subdunal and open wooded dunes, Mineral Springs, Tremont.

*Rubus argutus* Link, Highbush Blackberry, subdunal thickets, common.

*Rosa palustris* Marshall, Swamp Rose, subdunal area, moist and open, common.

*Rosa carolina* L., Pasture Rose, wooded dunes, common.

*Rosa blanda* Ait., Meadow Rose, wooded dunes, less common than the two preceding species.



*Malus ioensis* (Wood), Western Crab-apple, wet subdunal woods, Tremont; open wooded dune, Baileytown.

*Adenorachis floribunda* (Lindley), Purple Chokeberry, subdunal thickets and swamps, also interdunal, Keiser to Baileytown; common.

*Adenorachis melanocarpa* (Michx.), Black Chokeberry, subdunal and interdunal moist thickets, Mineral Springs, Tremont, common.

*Amelanchier canadensis* (L.), Service Berry, subdunal woods and wooded dunes, rather common.

*Amelanchier laevis* Wiegand, Smooth Service Berry, subdunal woods and wooded dunes, rather common.

*Crataegus cuneiformis* Jacquin, Large-fruited Thorn, wet subdunal woods, Tremont; single specimen.

*Crataegus calpodendron* (Ehrh.), Pear Thorn, subdunal woods Tremont; single specimen.

*Crataegus coccinea* L., Scarlet Thorn, subdunal woods, Keiser; several trees.

Identifications of the three species of Thorn were made by matching up the specimens with plates in Deam's Trees of Indiana.

*Prunus angustifolia* Marshall, Chickasaw Plum, dry subdunal sand, along New York Central tracks, near Baileytown.

*Prunus pumila* L., Sand Cherry, fore dune area, blowouts, and occasionally inland, common.

*Prunus pennsylvanica* L. f., Wild Red Cherry, wooded dunes, including top of first line, subdunal woods. Usually a small tree on the dunes, but often very large in subdunal woods.

*Prunus serotina* Ehrh., Wild Black Cherry, subdunal woods often a large tree.

*Prunus virginiana* L., Common Chokecherry, wooded dunes and rather conspicuous on top of first line of high dunes, also subdunal area.

*Prunus virginiana demissa* (Nutt.), Pubescent Chokeberry, subdunal woods, Tremont labeled "small trees," identified by Deam; Keiser labeled "5m. tree," apparently the same. Not included by Deam in Trees of Indiana but included in Shrubs of Indiana.

- Gleditsia triacanthos* L., Honey Locust, wooded dune, Tamarack only, about habitation, doing well and apparently spreading.
- Baptisia leucantha* T. and G., interdunal and less frequently subdunal meadows, Oak Hill, Port Chester.
- Lupinus perennis* L., Wild Lupine, open places of open wooded dunes, abundant.
- Melilotus alba* Desv., White Meliot, along road to Waverly Beach; Dune Creek mouth, much more frequent than in 1922.
- Trifolium pratense* L., Purple Clover, road across marsh at Keiser.
- Trifolium hybridum* L., Alsatian Clover, interdunal meadow Mineral Springs, rare.
- Cracca virginiana* L., Wild Sweet Pea, open wooded dunes, inland, common.
- Meibomia nudiflora* (L.), Naked-flowered Tick-trefoil, subdunal woods and wooded dunes; Furnessville, Mineral Springs.
- Meibomia grandiflora* (Walt.), Pointed-leaved Tick-trefoil, subdunal woods and wooded dunes, Furnessville, Tremont.
- Meibomia sessilifolia* (Torr.), Sessil-leaved Tick-trefoil, dry subdunal, Port Chester.
- Meibomia paniculata* (L.), Panicked Tick-trefoil, Tremont.
- Meibomia Dillenii* (Darl.), Dillen's Tick-trefoil, subdunal woods, Tremont.
- Meibomia canadensis* (L.), edge dry woods, Mineral Springs.
- Meibomia obtusa* (Muhl.), Hairy Small-leaved Tick-trefoil, edge of woods, Mineral Springs.
- Lespedeza hirta* (L.), Hairy Bush-clover, open places, inland dunes.
- Lespedeza capitata* (Michx.), Round-headed Bush-clover, open places, inland dunes.
- Vicia villosa* Roth, Hairy Blue Vetch, abundant in 1926 in subdunal field at Tamarack, not cultivated.
- Lathyrus maritimus* (L.), Beach Pea, open sand of rear fore-dune area or lake face of first line of higher dunes, Keiser, Tremont, rather rare.

- Lathyrus myrtifolius* Muhl., Myrtle-leaved Marsh Pea, subdunal marshy places, Tamarack to Mineral Springs.
- Glycine apios* L., Wild Bean, subdunal thicket, Tamarack.
- Falcata comosa* (L.), Hog Peanut, subdunal woods, Tremont.
- Falcata pitcheri* (T. and G.), Pitcher's Hog Pea-nut, road across marsh, Tamarack.
- Strophostyles helvola* (L.), Trailing Wild Bean, subdunal area, Tremont.
- Geranium maculatum* L., Spotted Crane's Bill, subdunal woods, common.
- Geranium carolinianum* L., Carolina Crane's Bill, subdunal clearing, Tremont, rare.
- Ceratoxalis stricta* (L.), Upright Yellow Wood-sorrel, subdunal field, Tremont.
- Ceratoxalis cymosa* Small, Tall Yellow Wood-sorrel, subdunal woods, Tremont.
- Nezera media* (Planch.), Stiff Yellow Flax, edge subdunal marsh, Port Chester.
- Impatiens biflora* Walt., Spotted Touch-me-not, subdunal woods, common.
- Zanthoxylum americanum* Miller, Prickly Ash, subdunal woods, Keiser to Port Chester, not very common.
- Ptelea trifoliata deamiana* Nieuwland, Deam's Hop-tree, a common and characteristic shrub of the upper and more open portions of the first line of wooded dunes. Type in Nieuwland Herbarium, from St. Joseph, Michigan.
- Polygala cruciata* L., Marsh Milkwort, interdunal meadows, Mineral Springs, Port Chester.
- Polygala polygama* Walt., Racemed Milkwort, open wooded dunes, inland, interdunal meadows, Tremont, Mineral Springs.
- Polygala paucifolia* Willd., Fringed Milkwort, rich wooded dune, Tremont, rare. A few plants with white flowers also found.
- Chamaesyce polygonifolia* (L.), Seaside Spurge, foredunes and blowouts, Keiser, Mineral Springs, not common.
- Chamaesyce Preslii* (Guss.), Large Spotted Spurge, subdunal roadside, Baileytown.
- Agaloma corollata* (L.), Flowering Spurge, open wooded

- dunes from the lake front to edge of subdunal marsh, very variable; abundant.
- Tithymalus cyparissias* (L.), Cypress Spurge, open spot wooded dune, Tremont, in one large spreading patch associated with *Saponaria officinalis*.
- Rhus copallina* L., Shining Sumac forming thickets, subdunal area, common.
- Rhus typhina* L., Staghorn Sumac, woods and thickets, subdunal area, common.
- Schmaltzia arenaria* Greene, Fragrant Sumac, open wooded dunes, particularly toward the lake front, common and characteristic.
- Toxicodendron vernix* (L.), Poison Sumac, subdunal swamp, particularly abundant around Mineral Springs, scattered plants elsewhere.
- Toxicodendron radicans* (L.), Poison Ivy, rich wooded dunes and subdunal woods, common.
- Ilex verticillata* L., Common Winterberry, subdunal woods and edges interdunal ponds, Tamarack to Mineral Springs, fairly common.
- Nemopanthus mucronata* (L.), Mountain Holly, subdunal woods, Mineral Springs, interdunal thicket, Oak Hill.
- Evonymus obovatus* Nutt., Running Euonymus, subdunal woods, and rich wooded dunes inland, rather common.
- Celastrus scandens* L., Bittersweet, lake side and upper portions first line high dunes, rather common in places.
- Acer saccharum* Marshall, Sugar Maple, rich wooded dunes, Tremont; only small trees, not found fruiting.
- Acer rubrum* L., Red Maple, a very common tree of the subdunal woods, occasionally small trees found on rich wooded dunes.
- Rhamnus alnifolia* L'Heriter, Adler Buckthorn, tamarack swamp, Mineral Springs, rather rare.
- Ceanothus americanus* L., New Jersey Tea, open wooded dunes, Tamarack to Mineral Springs, common and characteristic shrub.
- Vitis aestivalis* Michx., Summer Grape, subdunal swampy woods, Tremont.

*Vitis aestivalis bicolor* LeConte, Bicolor Summer Grape, rich wooded dune, Tremont.

I have insufficient material to determine whether the typical form is confined to subdunal woods, and the variety to wooded dunes.

*Vitis vulpina* L., Fox Grape, upper and open portions and lake face of first line of wooded dunes, common.

*Parthenocissus quinquefolia* (L.), Virginia Creeper, rich wooded dunes and subdunal woods, rather common.

*Parthenocissus quinquefolia hirsuta* (Donn.), subdunal woods, Tamarack, Tremont.

*Tilia glabra* Ventenat, Basswood, top portion of first line of wooded dunes, where it is a characteristic tree; occasionally in subdunal woods.

*Malva rotundifolia* L., Running Mallow, subdunal roadside, Baileytown.

*Hibiscus moscheutos* L., Swamp Rose-Mallow, Dune Creek mouth, not found elsewhere.

*Hypericum kalmianum* L., Kalm's St. John's Wort, subdunal and interdunal meadows, particularly around Port Chester and Mineral Springs.

*Hypericum perforatum* L., Common St. John's Wort, along railroad, Tremont.

*Hypericum punctatum* Lam., Spotted St. John's Wort, subdunal woods, Furnessville, Tremont, moist subdunal sand, Keiser.

*Hypericum boreale* (Britton), Northern St. John's Wort, interdunal ponds, ditch by railroad, Tamarack to Baileytown, rather common.

*Hypericum mutilum* L., Small-flowered St. John's Wort, moist open, Tremont, Port Chester.

*Hypericum majus* (A. Gray), Larger Canadian St. John's Wort, interdunal ponds, Tamarack to Baileytown.

*Sarothra gentianoides* L., Orange Grass, drying bottom of Little Lake.

*Triadenum virginicum* (L.), Marsh St. John's Wort, borders of subdunal marsh and interdunal ponds, Tamarack, Mineral Springs.

- Helianthemum Walkedae* Evans, Hoary Frostweed, open wooded dunes, inland.
- Helianthemum majus* (L.), Long-branched Frostweed, open wooded dunes.
- Hudsonia tomentosa* Nutt., False Heather, dry open inland places, fairly common around Wilson and Baileytown; a few plants at Mineral Springs, not found elsewhere.
- Lechea villosa*, Ell., Hairy Pin-weed, subdunal clearing and interdunal meadow, Tremont; open wooded dune, Port Chester.
- Lechea tenuifolia* Michx., Narrow-leaved Pin-weed, interdunal meadow, Port Chester.
- Viola pedata* L., Bird's-foot Violet, dry open inland wooded dunes, common.
- Viola sororia* Willd., Woolly Blue Violet, subdunal woods, Tremont.
- Viola cucullata* Ait., Marsh Blue Violet, subdunal marsh and woods, Tamarack to Mineral Springs, common.
- Viola sagittata* Ait., Arrow-leaved Violet, interdunal meadows, Port Chester, Oak Hill, Wilson, rather infrequent, not found elsewhere.
- Viola pallens* (Banks), Northern White Violet, subdunal woods, common.
- Viola primulifolia* L., Primrose-leaved Violet, ditch by railroad, Tamarack, not found elsewhere.
- Viola lanceolata* L., Lance-leaved Violet, subdunal and interdunal wet meadows, common.
- Viola eriocarpa* Schwein., Smoothish Yellow Violet, wet subdunal woods, rather common.
- Viola pubescens* Ait., Downy Yellow Violet, subdunal woods, not wet, and low inland wooded dunes, rather common.
- Viola conspersa* Reichenb., American Dog Violet, wet subdunal woods, common.
- Opuntia humifusa* (Raf.), Western Prickly Pear, dry very open, low inland wooded dunes; dry edges interdunal meadows, common.
- Rotala ramosior* (L.), Tooth-cup, interdunal meadow, Mineral Springs.

- Decodon verticulatus* (L.), Swamp Loosestrife, quacking bog, Mineral Springs, rare.
- Lythrum alatum* Pursh, Wing-angled Loosestrife, interdunal meadows, Port Chester, Mineral Springs.
- Rhexia virginica* L., Meadow Beauty, interdunal meadows, Tamarack to Mineral Springs.
- Isnardia palustris*, L., Marsh Purslane, subdunal marsh, Keiser.
- Ludvigia sphaerocarpa* Ell., Globe-fruited Ludwigia, Little Lake.
- Ludvigia polycarpa*, Short and Peter, Many fruited Ludwigia, Walker Lake.
- Ludvigia alternifolia* L., Seed-box, subdunal meadow, Keiser, Mineral Springs; low wooded dune, Baileytown, rather pubescent.
- Chamaenerion angustifolium* (L.), Great Willow-herb, interdunal meadows and burns, rather common.
- Epilobium densum* Muhl., Linear-leaved Willow-herb, quaking bog, Mineral Springs, interdunal marsh, Baileytown.
- Epilobium strictum* Muhl., Downy Willow-herb, quaking bog, Mineral Springs.
- Epilobium coloratum* Muhl., Purple-leaved Willow-herb, subdunal marsh, Keiser.
- Oenothera biennis* L., Common Evening Primrose, wooded dunes and dry subdunal places, variable.
- Raimannia laciniata* (Hill), Cut-leaved Evening Primrose, dry open subdunal, Keiser, rare.
- Raimannia rhombipetala* (Nutt.), Rhombic Evening Primrose, very open wooded low dunes inland, Mineral Springs, Port Chester.
- Kneiffia fruticosa* (L.), Common Sundrops, interdunal meadows, Port Chester, Mineral Springs.
- Circaea lutetiana* L., Enchanter's Nightshade, rich woods, mainly subdunal, common.
- Circaea alpina* L., Smaller Enchanter's Nightshade, subdunal woods, Tamarack, not found elsewhere.
- Proserpinaca palustris* L., Mermaid-weed, subdunal marsh, Tremont, interdunal ponds and wet meadows, Tamarack, Mineral Springs.



- Aralia racemosa* L., American Spikenard, subdunal woods, Keiser, Tamarack, rare.
- Aralia nudicaulis* L., Wild Sarsaparilla, subdunal woods, rich wooded dunes, common.
- Aralia hispida* Vent., Bristly Sarsaparilla, edges inland interdunal ponds and meadows, rather infrequent, never found in woods.
- Panax quinquefolium* L., Ginseng, rich wooded dune, Tremont, single plant.
- Panax trifolium* L., Dwarf Ginseng, common, subdunal woods, less common on rich wooded dunes.
- Eryngium aquaticum* L., Rattlesnake-master, interdunal meadows, Mineral Springs, Port Chester, not found elsewhere, common where found.
- Sanicula marylandica* L., Black Snake-root, subdunal woods, rich wooded dunes, Tremont.
- Sanicula gregaria* Bicknell, Clustered Snake-root, subdunal woods, rich wooded dunes, Tremont, Port Chester.
- Daucus carota* L., Wild Carrot, subdunal field, Port Chester, rare.
- Washingtonia Claytoni* (Michx.), Hairy Sweet-Cicely, subdunal woods, rich wooded dunes, rather common.
- Deringa canadensis* (L.), Honewort, subdunal woods, Keiser, Tremont.
- Angelica atropurpurea* L., Great High Angelica, subdunal meadow, Mineral Springs, rare.
- Oxypholis rigidius* (L.), Cowbane, subdunal marsh and open subdunal woods, Keiser to Mineral Springs.
- Thaspium trifoliatum* (L.), Purple Meadow-Parsnip, edges subdunal woods, Tremont.
- Thaspium barbinode* (Michx.), Hairy-jointed Meadow-Parsnip, rich wooded dune, Port Chester, rare.
- Zizia aurea* (L.), Golden Meadow-Parsnip, subdunal woods, wooded dune, Port Chester.
- Cicuta maculata* L., Water Hemlock, subdunal marsh, Tamarack to Mineral Springs, common.
- Cicuta bulbifera* L., Bulb-bearing Water Hemlock, subdunal marsh, Tamarack to Mineral Springs, very rare compared with preceding species.



- Sium cicutaeifolium* Schrank, Hemlock Water-Parsnip, subdunal woods and marsh, Tremont and eastward, rather rare. Mineral Springs, Nieuwland Herbarium.
- Cornus alternifolia* L. f., Pagoda Dogwood, subdunal woods, Keiser to Tremont, not common.
- Cornus rugosa* Lam., Round-leaved Dogwood, subdunal woods, Furnessville, rich wooded dunes, Tremont, Mineral Springs.
- Cornus Baileyi* Coulter and Evans, Bailey's Dogwood; first line wooded dunes, Tremont. One or two specimens seem to be hairy enough to qualify for this species.
- Cornus stolonifera* Michx., Red Osier-Dogwood, subdunal area, moist open situations; at top first line of wooded dunes, edges of blowuts, abundant.
- Cornus racemosa* Lam., Gray Dogwood, subdunal and less often interdunal moist thickets, Furnessville to Mineral Springs, locally common.
- Cynoxylon floridum* L., Flowering Dogwood, subdunal woods and rich wooded dunes, rather common.
- Cynoxylon canadense* L., Dwarf Cornel., tamarack swamp, Mineral Springs, not common nor found elsewhere.
- Nyssa sylvatica* Marsh, Tupelo, subdunal and interdunal moist areas, common.
- Pyrola secunda* Nutt., One-sided Wintergreen, Mineral Springs, Nieuwland Herbarium.
- Pyrola americana* Sweet, Round-leaved Wintergreen, subdunal woods, rich wooded dunes, Tremont, rather rare.
- Pyrola elliptica* Nutt., Shin-leaf, subdunal woods, rich wooded dunes, Furnessville to Port Chester, not common but very much more frequent than preceding species.
- Chimaphila umbellata* (L.), Pipsissewa., rich wooded dunes, Tremont, Mineral Springs, found twice.
- Monotropa uniflora* L., Indian Pipe, subdunal woods and rich wooded dunes; common.
- Hypopitys lanuginosa* Michx., Hairy Pine-sap, subdunal woods, rich-wooded dunes, Keiser, Tremont; infrequent.
- Chamaedaphne calyculata* (L.), Dwarf Cassandra, borders of interdunal ponds, subdunal marsh, Tamarack, Mineral Springs, locally common.

- Epigaea repens* L., Trailing Arbutus, edge interdunal meadow, open, Mineral Springs; subdunal woods, wooded dunes, Tremont, relatively infrequent.
- Gaultheria procumbens* L., Wintergreen, subdunal woods, wooded dunes, interdunal thickets, rather common.
- Arctostaphylos uva ursi coarctata* Fernald and McBride, Bearberry, open places and summits particularly first line of dunes, less frequent inland, relatively common.
- Gaylussacia baccata* (Wang.), Black Huckleberry, open wooded dunes, Tamarack, Tremont, Mineral Springs, infrequent.
- Vaccinium corymbosum* L., Highbush Blueberry, subdunal and interdunal marshy places, relatively common.
- Vaccinium pennsylvanicum* Lam., Lowbush Blueberry, subdunal woods and wooded dunes, rather frequent.
- Vaccinium pennsylvanicum nigrum* Wood, dry open wooded dune, Tremont.
- Vaccinium vacillans* Kalm, Dryland Blueberry, subdunal woods and wooded dunes, very common.
- Oxycoccus macrocarpon* Ait., Cranberry, quaking bog, Mineral Springs; edge Little Lake; rather rare. 5 miles west of Michigan City and Tamarack, Nieuwland Herbarium.
- Samolus parviflorus* Raf., Water Pimpernel, Mineral Springs, subdunal ditch, Nieuwland Herbarium.
- Lysimachia terrestris* (L.), Bulb-bearing Loosestrife; subdunal and interdunal wet meadows, locally common.
- Steironema ciliatum* (L.), Fringed Loosestrife, moist subdunal woods, fairly common; rich wooded dunes, rather rare; Furnessville to Mineral Springs.
- Steironema lanceolatum* (Walt), Lance-leaved Loosestrife, interdunal meadows, and in what appear to be old dried meadows among wooded dunes, rather common; rich wooded dunes, rather rare; Tremont to Port Chester.
- Steironema quadriflorum* (Sims), Linear-leaved Loosestrife, subdunal marsh, Mineral Springs, moderately common there, but not found elsewhere.
- Naumburgia thysiflora* (L.), Tufted Loosestrife, subdunal marsh Mineral Springs and Tamarack, rather rare.
- Trientalis americanus* Pursh, Starflower, subdunal woods.

- Fraxinus americana* L., White Ash, wooded dunes, usually near lake, but not on lake face, Tamarack to Tremont.
- Fraxinus nigra* Marsh, Black Ash, subdunal woods and adjacent wooded dunes, Furnessville.
- Gentiana crinita* Froel., Fringed Gentian, interdunal meadow, Port Chester, a few plants; not found elsewhere.
- Gentiana procera* Holm, Smaller Fringed Gentian, quaking bog, Mineral Springs, rare, not found elsewhere.
- Dasystephana saponaria* (L.), Soapwort Gentian, interdunal meadows, rather common; less frequently, dune edge of subdunal marsh, Mineral Springs, Port Chester.
- Dasystephana Andrewsii* (Griseb.), Andrews' Closed Gentian, moist open, Tremont; less common than preceding species.
- Dasystephana flavida* (A. Gray), Yellow Closed Gentian, open inland shrub-covered duneside, Mt. Green, Tremont; woods at edge of interdunal meadow, Mineral Springs, a few plants at each station.
- Bartonia virginica* (L.), Yellow Bartonia, edge subdunal marsh, Port Chester; subdunal woods, Tamarack; open wooded hillside, Tremont, rather rare.
- Menyanthes trifoliata* L., Buckbean, subdunal marsh, Tamarack, only a few plants at only one place; not seen in flower or fruit.
- Apocynum fol. [iis] androsaemi* L., Spreading Dogbane, wooded dunes, Tamarack to Mineral Springs.
- Apocynum cannabinum* L., Indian Hemp, low open dunes inland and moist subdunal and interdunal places, Tamarack to Tremont.
- Asclepias tuberosa* L., Butterfly-weed open wooded dunes and open places, common, variable as to fruit and leaf shape; yellow-flowered specimens rare.
- Asclepias incarnata* L., Swamp Milk-weed; wet open or partially open places, mainly subdunal, not common.
- Asclepias amplexicaulis* J. E. Smith, Blunt-leaved Milk-weed, open wooded dune, Oak Hill, rare.
- Asclepias Sullivantii* Engelm., Sullivant's Milk-weed, Mineral Springs, Nieuwland Herbarium.
- Asclepias exaltata* (L.), Poke Milk-weed, subdunal woods, and rich wooded dunes, Furnessville, Tremont, infrequent.

- Asclepias syriaca* L., Common Milk-weed, exposed summits and lake face of first line of dunes, less often open wooded dunes, not very common.
- Asclepias verticillata* L., Whorlled Milk-weed, very open wooded dunes, in places fairly common.
- Acerates viridiflora* (Raf.), Green Milk-weed, very open wooded dune, Port Chester, found once.
- Acerates floridana* (Lam.), Long-leaved Milk-weed, interdunal meadows, found twice.
- Convolvulus sepium* L., Great Bindweed, subdunal marsh, Keiser to Mineral Springs, rather common.
- Cuscuta Coryli* Engelm., Hazel Dodder, growing on small herbs, interdunal meadows and subdunal woods.
- Cuscuta Gronovii* Willd., Gronovius' Dodder, growing on *Impatiens*, *Saururus*, *Cephalanthus*, *Eupatorium*, *Solidago*, mainly subdunal woods, Tamarack to Tremont.
- Cuscuta Gronovii vulgivaga* (Engelm.), growing on *Aster* and *Cephalanthus*, subdunal, Tremont.
- Cuscuta pentagona* Engelm. Five-angled Dodder, subdunal marsh, Tamarack, host undetermined.
- Phlox divaricata* L., Wild Blue Phlox, subdunal woods, very common; wooded dunes, less common.
- Phlox argillacea* Clute and Ferris, Midland Downy Phlox, open wooded dunes, rather common.
- Phlox bifida* Beck, Cleft Phlox, dry open sand of low wooded dunes, inland, Mineral Springs, rather common there, elsewhere not found.
- Cynoglossum officinale* L., Hound's Tongue, subdunal woods and along railroad, rare.
- Lappula virginiana* (L.), Virginia Stickseed, open wooded dunes, inland; subdunal woods, rather common.
- Myosotis laxa* Lehm., Smaller Forget-me-not, subdunal wet open places, not common.
- Lithospermum carolinense* (Walt.), Gmelin's Puccoon, open wooded dunes and exposed lake face of dunes, common.
- Lithospermum canescens* (Michx.), Hoary Puccoon, low inland subdunal woods, Baileytown, found once.
- Verbena urticifolia* L., White Vervain, road across marsh, Keiser.

*Verbe*  
du  
*Verbe*  
Ba  
*Teucr*  
ma  
*Scute*  
an  
*Scute*  
Ke  
*Nepet*  
Sp  
*Prun*  
co  
*Stach*  
ne  
Ne  
On  
th  
*Stach*  
mo  
*Mona*  
in  
of  
sin  
*Mona*  
su  
*Clinop*  
Ke  
*Koell*  
an  
ra  
*Lycop*  
in  
*Lycop*  
du  
*Lycop*  
du

- Verbena hastata* L., Blue Vervain, edges subdunal marsh, near dunes, rather common.
- Verbena stricta* Vent., Hoary Vervain; subdunal roadside, Baileytown.
- Teucrium canadense* L., American Germander, subdunal marsh at edge of dunes, Tremont, infrequent.
- Scutellaria lateriflora* L., Mad-dog Skullcap, subdunal woods and marsh, Tremont, Mineral Springs.
- Scutellaria galericulata* L., Marsh Skullcap, subdunal marsh, Keiser to Mineral Springs.
- Nepeta cataria* L., Catmint, road across marsh, Mineral Springs.
- Prunella vulgaris* L., Self-heal, subdunal woods, moderately common.
- Stachys aspera* Michx., *teste* Deam, seems to resemble more nearly *S. palustris* of Britton and Brown, 1913, Hedge Nettle. Subdunal and less often interdunal marshy places. One specimen from subdunal woods, Tremont, is less hairy than other specimens and has much longer petioles.
- Stachys hyssopifolia* Michx., Hyssop Hedge Nettle, interdunal meadows, Mineral Springs, Port Chester.
- Monarda fistulosa* L., Wild Bergamot, subdunal and inland, interdunal meadows, open woods, occasionally on lake face of dunes. Appears to be spreading and more common since 1922.
- Monarda punctata* L., Horse-mint, open wooded dunes and subdunal and interdunal dry places, very common.
- Clinopodium vulgare* L., Field Basil, subdunal moist open Keiser, rare.
- Koellia virginiana* (L.), Virginia Mountain-Mint, subdunal and interdunal open places, Mineral Springs, Port Chester, rather common.
- Lycopus uniflorus* Michx., Northern Bugle-weed, subdunal and interdunal wet places, Tamarack to Baileytown.
- Lycopus rubellus* Moench., Stalked Water Hoarhound, subdunal woods, Tremont, Tamarack.
- Lycopus americanus* Muhl., Cut-leaved Water Hoarhound, subdunal marshy places, Tamarack to Tremont.

- Mentha canadensis* L., American Wild Mint, subdunal marsh; fairly common.
- Physalis virginiana* Mill., Virginia Ground-cherry, wooded dunes, inland, Tremont, Mineral Springs; rather infrequent.
- Solanum nigrum* L., Black Nightshade, low ground, interdunal and subdunal, Tamarack, Mineral Springs; rather rare.
- Solanum carolinense* L., Horse-Nettle, dry open interdunal and subdunal sand, Tamarack, Tremont; rare.
- Solanum dulcamara* L., Climbing Nightshade, subdunal woods, rather infrequent, does not give the impression of an introduced weed.
- Datura stramonium* L., Stramonium, subdunal roadside, Baileytown, rare. The single specimen collected is referable to the form *D. tatula* L.
- Verbascum thapsus* L., Great Mullen, subdunal clearings, fields and burns, common.
- Linaria linaria* (L.), Yellow Toad-flax, along New York Central tracks and subdunal roadside, Baileytown, common at that single place.
- Linaria canadensis* (L.), Blue Toad-flax, open places, low inland dunes, moderately common.
- Scrophylaria leporella* Bicknell, Hare Figwort, rich wooded dune, Port Chester; along railroad, Keiser; also noticed along subdunal roadsides at Baileytown, rather infrequent.
- Chelone glabra* L., Turtle-head, wet subdunal and inland open or sometimes wooded places; rather common.
- Penstemon calycosus* Small teste Deam, Long-sepaled Beard-tongue, subdunal meadow, Tremont, about 100 plants in a small patch, found but once.
- Mimulus ringens* L., Square-stemmed Monkey-flower, open wet subdunal and inland interdunal places, Tamarack to Mineral Springs.
- Gratiola virginiana* L., Clammy Hedge Hyssop, subdunal marsh, Keiser, Tamarack.
- Gratiola sphaerocarpa* Ell., Round-fruited Hedge Hyssop, subdunal marsh, Keiser.
- Veronica glandulifera* Pennell, teste Deam, Glandular Brook-

lime, Dune Creek mouth; specimens from Mineral Springs in Nieuwland Herbarium.

*Veronica scutellata* Schwein, American Brooklime, in water, subdunal marsh, Keiser to Tremont, locally common.

*Veronica peregrina* L., Purselane Speedwell, road across marsh, Tamarack.

*Veronica arvensis* L., Corn Speedwell, road across marsh, Keiser.

*Buchnera americana* L., Bluehearts, interdunal meadow, Port Chester, single specimen.

*Dasystoma pedicularia* (L.), Fern-leaved False Fox-glove, open wooded dunes, mainly inland; rather common.

*Dasystoma virginica* (L.), Smooth False Fox-glove, open wooded dunes, mainly inland; rather common.

*Agalinis purpurea* (L.), Large Purple Gerardia, interdunal and subdunal meadows locally common, especially interdunal meadows at Port Chester.

*Agalinis paupercula* (A. Gray), Small Flowered Purple Gerardia, ditch by railroad, Tamarack; perhaps only a small flowered form of preceding species.

*Agalinis tenuifolia* (Vahl), Slender Purple Gerardia, moist subdunal meadow, Tremont, Furnessville, only seen in two places, and there common.

*Castilleja coccinea*, (L.), Scarlet Painted Cup, interdunal meadow, Port Chester; rather rare.

*Pedicularis lanceolata* Michx., Swamp Lousewort, subdunal and interdunal meadows and bogs, Tremont to Mineral Springs, rather rare; once found in subdunal woods, Port Chester.

*Pedicularis canadensis* L., Lousewort, subdunal woods and inland wooded dunes, common.

*Melampyrum lineare* Lam., Narrow-leaved Cow-Wheat, open wooded dunes, Baileytown, Furnessville, rather infrequent.

*Vesiculina purpurea* (Walt.) Purple Bladderwort, Little Lake; interdunal pond, Tamarack.

*Utricularia gibba* L., Small Yellow Bladderwort, Little Lake; interdunal pond, Tamarack.

*Utricularia macrorhiza* LeConte, Large Yellow Bladderwort, Little Lake; interdunal pond, Tamarack.



- Aphyllon uniflorum* (L.), Pale Broom-rape, subdunal woods, Tremont, found once.
- Conopholis americana* (L.f.), Squaw-root, subdunal woods, Tremont, Keiser, found twice.
- Leptamnium virginianum* (L.), Beech-drops, subdunal woods, Tremont, under oaks; Keiser, under beech; rather rare.
- Plantago Rugelii* Decne, Rugel's Plantain, roads, subdunal woods, Mineral Springs and elsewhere, not common.
- Plantago lanceolata* L., Lance-leaved Plantain, subdunal field, Tremont, rare.
- Houstonia coerulea* L., Bluets, interdunal meadow, Port Chester, common in a few small patches, not found elsewhere.
- Cephalanthus occidentalis* L., Button-bush, subdunal and interdunal wet places, common.
- Mitchella repens* L., Partridge-berry, chiefly subdunal woods, not uncommon.
- Galium aparine* L., Cleavers, subdunal woods, common.
- Galium pilosum* Ait., Hairy Bed-straw.
- Galium circaezans* Michx., Cross-Cleavers, subdunal woods, rich wooded dunes, Keiser, Tremont.
- Galium labradoricum* Wiegand, Labrador Marsh Bed-straw, quaking bog, Mineral Springs.
- Galium Claytoni* Michx., Clayton's Bed-straw, interdunal meadow, Baileytown, ditch by railroad, Furnessville; subdunal marsh, Tamarack.
- Galium concinnum* Torr. and Gray, shining Bed-straw, subdunal woods, Tremont, Furnessville.
- Sambucus canadensis* L., Common Elder, subdunal area, common; occasionally on wooded dunes.
- Sambucus racemosus* L., Red-berried Elder, tamarack swamp Mineral Springs, where it is common; a few plants are also found in subdunal woods at Keiser and Tamarack.
- Viburnum acerifolium* L., Maple-leaved Viburnum, subdunal woods, less common on wooded dunes.
- Viburnum affine* Bush, Missouri Viburnum, rich wooded dune, Port Chester, found once.
- Viburnum lentago* L., subdunal woods, Keiser to Mineral Springs, not infrequent.
- Linnæa borealis americana* (Forbes), Twin Flower, tamarack



rack swamp, Mineral Springs. Rare. Nieuwland Herbarium.

*Lonicera dioica* L., Limber Honeysuckle, wet subdunal woods - less often open places, Furnessville to Mineral Springs, rather infrequent.

*Lonicera prolifera* (Kirchner), Grape Honeysuckle, a single specimen without flowers or fruit has been provisionally referred to this species by Mr. C. C. Deam, open wooded dune, Port Chester.

*Diervilla lonicera* Mill., Bush Honeysuckle, wooded dunes, not uncommon.

*Michrampelis lobata* (Michx.), Wild Balsam Apple, subdunal clearing, Tremont, found once.

*Campanula rotundifolia* L., Blue Bell, open wooded dunes, Keiser to Mineral Springs, rather common.

*Campanula aparinoides* Pursh, Marsh Bellflower, subdunal marsh, Keiser to Mineral Springs; interdunal marsh, Baileytown; not infrequent.

*Lobelia cardinalis* L., Cardinal Flower, subdunal marshes and ditches, common.

*Lobelia syphilitica* L., Great Lobelia, subdunal marshes and ditches, less common than preceding species.

*Lobelia spicata* Lam., Pale Spiked Lobelia, interdunal meadow, Port Chester, about 50 plants together, found once.

*Lobelia inflata* L., Inflated Lobelia, subdunal open places Keiser, Tremont, infrequent.

*Lobelia Kalmii* L., Kalm's Lobelia, quaking bog, Mineral Springs.

*Krigia virginica* (L.), Carolina Dwarf Dandelion, very open dunes, inland; subdunal dryish places, Tremont, Mineral Springs, locally common.

*Cynthia virginica* L., Virginia Goat's Beard, low open wooded dunes, inland, Tremont, Mineral Springs, not common.

*Leontodon taraxacum* L., Dandelion, subdunal woods, Keiser.

*Leontodon erythrospermum* (Andrz.), Red-seed Dandelion; subdunal field, Tremont, common.

*Lactuca virosa* L., Prickly Lettuce, top of blowout, Tremont; subdunal field, Mineral Springs; dwarf plants on wooded dunes, Tremont, rare.

- Lactuca canadensis* L., Wild Lettuce, open wooded dunes, subdunal and interdunal meadows and roadsides, becoming more common.
- Hieracium canadense* Michx., Canada Hawkweed, inland open wooded dunes, less often subdunal meadows, Tremont to Baileytown, rather common.
- Hieracium scabrum* Michx., Rough Hawkweed, wooded dunes, and open subdunal woods, Tremont, moderately common.
- Hieracium Gronovii* L., Gronovius' Hawkweed, open wooded dunes, Tremont, Mineral Springs.
- Nabalus altissimus* (L.), Tall White-Lettuce, subdunal woods and rich wooded dunes, Keiser, Tremont, much less common than next species.
- Nabalus albus* (L.), White Lettuce, subdunal woods and rich wooded dunes, rather common.
- Prenanthes racemosus* (Michx.), Glaucous White Lettuce, quaking bog, Mineral Springs; interdunal meadow, Port Chester, infrequent.
- Ambrosia trifida* L., Great Ragweed, subdunal roadside, Baileytown, rare.
- Ambrosia elatior* L., Ragweed, subdunal waste areas, not common; less frequently in woods and lake face of dunes, Tremont, Mineral Springs.
- Xanthium pennsylvanicum* Wallr., Pennsylvania Clotbur, road across marsh, Keiser, rare.
- Vernonia fasciculata* Michx., Western Iron-weed, subdunal and interdunal meadows, Tremont, Port Chester, common.
- Eupatorium purpureum* L., Joe-Pye Wood, subdunal moist places, common.
- Eupatorium serotinum* Michx., Late-flowering Thorowort, subdunal fields and meadows, Port Chester, Baileytown, not common.
- Eupatorium sessilifolium* L., Upland Boneset, open wooded dunes, Mineral Springs, Tremont, not common.
- Eupatorium perfoliatum* L., Boneset, subdunal woods and moist open places, Keiser to Mineral Springs, rather common.
- Eupatorium urticaefolium* Reichard, White Snake-root, subdunal woods, rich wooded dunes, Tremont, infrequent.
- Kuhnia eupatorioides* L., open places, wooded dunes, usually

near the lake face, Tremont, Mineral Springs, moderately common.

*Lacinaria cylindracea* (Michx.), Cylindric Blazing Star, rather open wooded dunes, mainly inland, Tremont, infrequent.

*Lacinaria scariosa* (L.), Upland Blazing Star, open wooded dunes, common.

*Lacinaria spicata* (L.), Lowland Blazing Star, subdunal and interdunal moist meadows, mainly around Mineral Springs, common.

*Solidago caesia* L., Wreath Golden-rod, mainly subdunal woods, not common.

*Solidago uliginosa* Nutt., Bog Golden-rod, subdunal areas, usually moist, Mineral Springs to Tamarack.

*Solidago speciosa angustata* T. and G., Narrow Showy Golden-rod, open wooded dunes, Tremont, Mineral Springs, common. The typical form *S. speciosa speciosa* (Nutt.) apparently does not occur in the region. Most of my specimens were labeled *angustata* by Dr. Blake and the others "toward *angustata*."

*Solidago Gillmani* (A. Gray), Gillman's Golden-rod, upper foredune area and lake face wooded dunes, moderately common.

*Solidago rugosa* Mill., Wringle-leaved Golden-rod, subdunal and interdunal open wet places, Tamarack to Baileytown, rather common. Rarely in woods, in which cases the leaves are much thinner.

*Solidago patula* Muhl., Rough-leaved Golden-rod, subdunal marsh, fairly common, occasionally in subdunal woods.

*Solidago ulmifolia* Muhl., Elm-leaved Golden-rod, subdunal woods, Port Chester to Tamarack.

*Solidago canadensis* L., Canada Golden-rod, open subdunal and interdunal places.

*Solidago serotina* Ait., Late Golden-rod open subdunal and interdunal places.

*Solidago serotina gigantea* (Ait.), Large Late Golden-rod, open subdunal and interdunal areas, apparently more common than the typical form.

*Solidago altissima* L., Tall Golden-rod, subdunal marsh.

- Solidago nemoralis* Ait., Gray Golden-rod, open wooded dunes and dry interdunal meadows, common.
- Euthamia graminifolia* (L.), Bushy Golden-rod, subdunal and interdunal meadows, rather common.
- Euthamia graminifolia Nuttalli* (Greene), Nuttall's Bushy Golden-rod, railroad ditch, Tamarack.
- Euthamia tenuifolia* (Pursh), Slender Fragrant Golden-rod, subdunal and interdunal marshy places, locally common.
- Aster macrophyllus* L., Large-leaved Aster, subdunal woods and rich wooded dunes, rather common.
- Aster macrophyllus pinquifolius* Burgess, subdunal woods, Tremont.
- Aster furcatus* Burgess, Forked Aster, subdunal woods, Tremont. Specimen in Blake Herbarium.
- Aster azureus* Lindl., Sky-blue Aster, open wooded dunes, rather common, occasionally interdunal meadows, Tremont, Mineral Springs.
- Aster cordifolius* L., Blue Wood Aster, subdunal woods, Furnessville.
- Aster sagittifolius* Willd., Arrow-leaved Aster, wooded dunes, subdunal woods, Tremont, Mineral Springs.
- Aster novaeangliae* L., New England Aster, subdunal marshy places, common.
- Aster puniceus* L., Red-stalked Aster, subdunal marshy places, Mineral Springs to Tamarack.
- Aster* near *concinus* Willd., Smooth Aster, quaking bog, Mineral Springs.
- Aster juncus* Ait., Rush Aster, subdunal marsh, Tamarack to Mineral Springs.
- Aster novibelgii* L., New York Aster, moist open, Mineral Springs.
- Aster longifolius* Lam.?, Long-leaved Aster, subdunal marsh, Tamarack.
- Aster dumosus* L., Bushy Aster, interdunal meadows, Port Chester.
- Aster lateriflorus* L., Starved Aster, subdunal woods and meadows, Tremont, Furnessville.
- Aster vimineus* Lam., Small white Aster, subdunal meadow, Tremont.

- Aster salicifolius* Ait., Willow-leaved Aster, subdunal meadows, less often woods, Tremont, Tamarack.
- Aster paniculatus* Lam., Panicked Aster, subdunal marsh, Tamarack.
- Aster Tradescanti* L., Tradescant's Aster, subdunal meadow Tremont.
- Aster ericoides platyphyllus* T. and G., White Heath Aster, subdunal meadow, Tremont.
- Aster ericoides villosus* T. and G., Hairy Heath Aster, subdunal meadow, Tremont.
- Erigeron pulchellus* Michx., Robin's Plantain, interdunal meadow, Mineral Springs.
- Erigeron philadelphicus* L., Philadelphia Fleabane, subdunal meadow, Mineral Springs.
- Erigeron annuus* (L.), Sweet Scabious, interdunal meadow, Mineral Springs.
- Erigeron ramosus* (Walt.) Daisy Fleabane, dry open grass covered dunes, Tremont; interdunal meadow, Mineral Springs.
- Leptilon canadense* (L.), Canada Fleabane, interdunal meadow, and subdunal open places, a weed, increasing in numbers.
- Doellingeria umbellata* (Mill.), Tall Flat-topped White Aster, subdunal woods and marshes, Tremont, Mineral Springs, locally common.
- Ionactis linariifolius* (L.), Stiff-leaved Aster, open wooded dunes, common.
- Antennaria fallax* Greene, Deceitful Cat-foot, wooded dunes and open places, common.
- Antennaria Parlanii* Fernald, Parlin's Cat-foot, wooded dune, Tremont.
- Antennaria plantaginifolia* (L.), Plantain-leaved Cat-foot, open wooded dunes and edges interdunal meadows.
- Antennaria neglecta* Greene, Field Cat-foot, interdunal meadow, Port Chester.
- Gnaphalium obtusifolium* L., Sweet Everlasting, interdunal meadows, low open wooded dunes, rather common.
- Inula helenium* L., Elecampane, edge subdunal woods, Tremont, rare.

- Silphium integrifolium* Michx., Entire-leaved Rosin-Weed, subdunal area.
- Rudbeckia hirta* L., Black-eyed Susan, interdunal meadows, common, becoming more so and invading wooded dunes.
- Rudbeckia laciniata* L., Wild Golden-glow, mainly subdunal moist open places, common.
- Helianthus petiolaris* Nutt., Prairie Sunflower, along Dunes Highway, and on top of blowout, Mineral Springs, rather rare and local but evidently increasing in numbers.
- Helianthus occidentalis* Riddell, Few-leaved Sunflower, very open and low inland wooded dunes, Port Chester, Mineral Springs, common.
- Helianthus grosse-serratus* Martens, Saw-tooth Sunflower, subdunal marshy places, Port Chester.
- Helianthus divaricatus* L., Woodland Sunflower, wooded dunes, rather common.
- Helianthus decapetalus* L., Thin-leaved Sunflower, subdunal woods and wooded dunes, much less frequent than preceding species.
- Coreopsis lanceolata* L., Lance-leaved Tickseed, very open wooded dune, Port Chester; common there, not seen elsewhere.
- Coreopsis tripteris* L., Tall Tickseed, subdunal, interdunal meadows, inland wooded dunes, rather common.
- Coreopsis palmata* Nutt., Stiff Tickseed, open spaces and low inland wooded dunes, Port Chester, Mineral Springs, Baileytown, infrequent.
- Bidens connata* Muhl., Purple-stemmed Swamp Beggar-tick, interdunal meadows, Tamarack, Mineral Springs, not very common.
- Bidens comosa* (A. Gray), Leafy-bracted Tickseed, road across marsh, Tamarack, not common.
- Bidens discoidea* (T. and G.), Small Beggarticks, edge wet subdunal woods, Baileytown, not common.
- Bidens trichosperma* (Michx.), Tall Tickseed-Sunflower, subdunal and interdunal meadows, Tamarack to Mineral Springs, very abundant, varies much in height.
- Bidens aristosa* (Michx.), Western Tickseed-Sunflower, subdunal moist meadow, Tremont.
- Helenium autumnale* L., Sneezeweed, subdunal road, Keiser, Port Chester, rare.

- Achillea millefolium* L., Yarrow, subdunal open dryish places, occasionally interdunal meadows, Port Chester, Tremont, not common, but increasing in numbers.
- Anthemis cotula* L., Fetid Camomile, road across marsh, Tamarack, found in one small patch.
- Chrysanthemum leucanthemum* L., White Daisy, subdunal area, Tremont, not common.
- Chrysanthemum balsamita* L., Costmary, subdunal clearing, Tremont, one small patch.
- Tanacetum vulgare* L., Tansy, subdunal clearing, Tremont, one patch.
- Erechtites hieracifolia* (L.), Fire-weed, interdunal meadow, mineral Springs, not common.
- Artemisia caudata* Michx., Wild Wormwood, foredune area, and open wooded dunes, Keiser to Mineral Springs, common.
- Artemisia canadensis* Michx., Canada Wormwood, foredune area, Keiser to Mineral Springs, much less common than preceding species.
- Mesadenia atriplicifolia* (L.), Pale Indian Plantain, open wooded dunes, moderately common.
- Senecio plattensis* Nutt., Prairie Ragwort, open wooded dunes, Tremont, Mineral Springs, moderately common.
- Senecio aureus* L., Golden Ragwort, subdunal marsh, Keiser; subdunal woods, Tamarack, infrequent.
- Arctium minus* Schk., Common Burdock, subdunal roadside, infrequent.
- Cirsium altissimum* (L.), Roadside Thistle, open woods, rich wooded dunes, Tremont, Mineral Springs, not common.
- Cirsium discolor* (Muhl.), Field Thistle, subdunal meadow and thickets, Tremont, Port Chester, infrequent.
- Cirsium Pitcheri* (Torr.), Pitcher's Thistle, blowouts, and lake face of dunes, fairly common at Keiser, rare elsewhere.
- Cirsium muticum* Michx., Swamp Thistle, subdunal meadows, Tremont, Mineral Springs, rather common.
- Cirsium arvense* (L.), Canada Thistle, roadside across marsh, Mineral Springs; interdunal meadow, Baileytown, infrequent, not seen before 1925.

Mar  
tom  
near  
1917  
it h  
own  
ent  
but

S  
Mar  
sion  
logu  
was  
in th  
it ne  
Car  
that  
gom  
Cou  
grou

C  
that  
and  
inch  
1:80

I  
says  
ly-d  
prai



## THE MARSH HAWK

BENJAMIN FRANKLIN BUSH

Harris in his "Birds of the Kansas City Region," says the Marsh Hawk is seen ranging over the Missouri River Bottoms from March 12 to April 15, and that two birds remained near the Country Club District the entire winter of 1916-1917, and though formerly a rare breeder in this vicinity, it has not been found nesting here for several years. My own observations of this species are, that the birds are present along the Missouri River Bottoms throughout the year, but are more numerous during Spring and Autumn.

Shirling in his "Birds of Swope Park," says that the Marsh Hawk probably does not nest in the Park, but occasionally uses it for a hunting ground. Widmann in his "Catalogue of the Birds of Missouri," says that the Marsh Hawk was undoubtedly formerly a very common Summer resident in the prairie region of Missouri, and that Audubon met with it near the Northwest corner of the State, May 6, 1843; that Carver found it breeding in Clark County in the nineties and that it is reported as breeding from Kansas City and Montgomery City; and that the last record comes from St. Charles County, June, 1905, where in the tall grasses of the Club grounds it still succeeded in raising a brood.

Coues in his "Great Key to North American Birds," says that the nest of the Marsh Hawk is placed on the ground, and rather neatly built of hay, a foot in diameter, three inches high; eggs 3-6, commonly 4-5, broad and equal-ended, 1:80 to 1:90 inches long, dull white.

Davies in his "Nests and Eggs of North American Birds," says the Marsh Hawk is one of the most abundant and widely-diffused of our birds, and is found especially in swampy prairies or marshy places; and that the nest may be found,

placed on the ground, which is only a collection of twigs and hay, and from three to seven inches in height, and a foot or more in diameter, and that sometimes the nests are of larger proportions, which is the result of nesting in the same spot for a number of years; that the eggs are from three to six in number, and may be found from the first of May to the 20th of June.

From the above quotations we gather that the Marsh Hawk is not only common where it occurs, but that it also is a wide-spread species, not uncommon even in the Winter, more abundant in the Spring and Autumn, and that it breeds in marshy or swampy grounds, but no positive information as to its nesting in the Kansas City region; and no collection of eggs is known prior to this time.

On the West side of the Missouri River just opposite Courtney, Missouri, there is a long tract of low swampy bottom, some five miles long and one-fourth to one mile wide, that is overflowed by the river several times every year. This tract is densely overgrown with small willows, with now and then an occasional cotton-wood, elm or sycamore, and interspersed with thickets here and there of cornel, yearling sycamores and box-elders and young elms, and an endless patch of low smartweeds, with here and there great patches of *Equisitum*.

The small willows grew so thickly that the greater part of them have died and fallen down in a strangely confusing entanglement for those who attempt to traverse this tract.

On May 21st, accompanied by my son, I visited this wilderness to see what might be found there, and we were soon in an apparently interminable thicket, where it was almost impossible to make our way for the fallen willows, the giant ragweeds and great smartweeds; the day was a most perfect one for May, and the riot of bird-songs and noises was almost indescribable. The Whiteeyed Vireos filling the air with their trilling songs, whilst the erratic Yellow-breasted Chats were cutting their fantastic capers in the air, the Maryland Yellowthroats were pouring forth their rollicking airs, the gayly-colored Towhees were chasing each other from clump to

clump, and the Acadian Flycatchers were sending forth their plaintive "pe-as" to each other.

While making our way through a tract of densely fallen willows to reach the high bottom, we flushed a Marsh Hawk from its nest on the ground in the midst of a patch of low smartweeds and more or less brush. We left the nest then, and continued on our way to the high bottom and great levee there, and after several hours returned to the nest and again found the bird on it.

There were six eggs in the nest, and an examination of the nest showed that it had been used for several reasons, the upper nest being quite new, and made of fine smartweed stems, a few grass stems and some slender willow twigs; the one just under this nest was composed of quite similar materials and was much older, but still in good condition, whilst the bottom nest was much too rotten to be taken up.

This nest, its formation, the number of eggs, their size, shape and color, agree with everything that the writers above-mentioned have said of the Marsh Hawk, and this is the first definite knowledge we have of this species nesting in the Kansas City region.

Amer

T  
ticula  
of th  
also  
to th  
infor

T  
but r  
howe  
erally  
ian o  
tion  
Euro

T  
abun  
ling  
of th  
is a  
may  
subor

O  
descr  
that  
Whet  
crinoi  
graph  
tions  
tologi  
will l

## BOOK REVIEWS

American Silurian Crinoids, by Frank Springer. Smithsonian Institution, Publication 2871. Washington, 1926.

This quarto volume of 239 pages and 33 plates is devoted particularly to the Silurian crinoids of Tennessee and Indiana. Because of their importance in Tennessee strata, a few blastoids and cystoids also are described. More than half of the species of crinoids belong to the Camerata. Seven new genera are proposed, and important new information is given concerning several others.

The discussion of the Flexibilia is limited, since Mr. Springer has but recently published a monograph on that order. One is surprised, however, to notice the importance of this group, whose members generally are considered rare. *Pymosaccus*, a genus typical of the Silurian of England and Gotland, is abundant in the Beech River formation of Tennessee, with one species barely distinguishable from its European prototype.

The most important development among the Inadunata is the abundance of good material representing the Calceocrinidae, reef-dwelling types whose evolution is for the first time made plain. In view of the family ending which Springer gives to their name, however, it is a little surprising to find them within the Heterocrinidae. But this may be better than Jaekel's proposal to raise them to the rank of suborder—the Calceocrinites.

One interesting feature of the book is the brevity of the species descriptions. Springer believes, when adequate pictures are published, that tables of dimensions "are usually only a pedantic incumbrance." Whether this conclusion can be extended to other groups than the crinoids, and to other methods of treatment than the systematic monograph is a little doubtful. But his major contention, that most descriptions are cumbersome, cannot be questioned. One problem which paleontologists must face is that of devising some sort of description which will be at once adequate, brief, and useful in work of comparison.

—C. L. F.

On the Fossil Faunas from Per Schei's Series D from Ellesmere Land, by I. P. Tolmachoff. Report of the Second Norwegian Arctic Expedition in the "Fram" 1898-1902. No. 38. Oslo, 1926.

The stratigraphic significance of the Devonian fossils collected by Per Schei during the two seasons that the Fram wintered in Goose Fjord, Ellesmere Land, long has been in doubt. Meyer, who described the brachiopods, concluded that they belonged to strata ranging from lower Helderberg to "Carboniferous." Loew, working on the corals, found species in Horizon D, called upper Devonian by Meyer, to be dominantly middle Devonian in aspect. Per Schei himself thought that the Devonian extended below his Series D.

Dr. Tolmachoff has studied the fossils, mainly molluscs, trilobites and ostracods, which comprise the chief remaining portion of Per Schei's Devonian collections. Paucity of specimens has hampered his work; and rather than leave forms unidentified, or risk misuse of established specified names, Dr. Tolmachoff has made new species freely. Fortunately, however, he has introduced ample comparisons with forms already described, and the illustrations which he gives are excellent.

From the material at hand, and from his analyses of the reports by Loew and Meyer, Tolmachoff feels forced to revise the earlier opinions on the correlation of the Ellesmere Devonian (Series D) with that of Europe and America. Evidence for Helderbergian age of the lower strata he finds to be doubtful; the horizon Db is mainly middle Devonian. Meyer's "Carboniferous" brachiopods from the uppermost member, Di, he concludes to be erroneously labeled, since they lie in rock wholly unlike any in the true Di, whose fossils point toward earliest late Devonian age. Thus he restricts the period covered by Series D to middle and earliest late Devonian, with the possibility of some early Devonian in the lowermost members.

The chief relationships of the faunas, particularly those of the upper members, are with faunas of the eastern half of North America. Thus the dominant ostracod is *Bythocypris devonica* Ulrich, of the Ohio Valley, while the gastropods are of markedly American aspect. The most westerly relationships appear in a pteropod which resembles one described by Cleveland from Milwaukee. However, this probably is a Hamilton rather than a Cedar Valley form, so that the relationship remains eastern despite locality.

C. L. F.

Whisperings of the Caribbean. By Joseph J. Williams, S. J., Benziger Bros. Price \$2.00.

The island of Jamaica,—its history, topography, geology, and the habits, customs and spiritual life of the inhabitants, form the subject matter of this volume of two hundred and fifty pages. The geologist and meteorologist will be interested in the chapters on earthquakes and hurricanes, and the anthropologist will find the chapters on Anancy stories and bush funerals valuable. The four remaining chapters are historical. The purpose of the author seems to be to arouse interest in Columbus' "Garden of the Indies" rather than to present a detailed account of any special features connected with his subject.—F.J.W.

---

Taxidermy and Museum Exhibition. By John Rowley.—D. Appleton and Co., N. Y.

When an author packs the results of a half century of work into a book, we expect that book to be standard on the subject of which it treats. Such a book is the one in question. The volume of 325 pages is the most exhaustive presentation of the subject known to us. In nine interesting chapters, the author discusses every phase of the taxidermist's art. We are told what outfit to use for collecting—guns, traps, poisons,—what tools and materials to use in the preparation of specimens, how to make casts and moulds, how to skin the various animals, and, finally, how to mount them in life-like positions. The book is simply and interestingly written,—a record of personal work rather than a compilation of other men's experiences. —F. J. W.

---

Heredity. By A. F. Schull. McGraw-Hill Book Co., N. Y.

This book attempts to present a rather difficult and special branch of biology to those who have no previous knowledge of any phase of biology. The attempt seems to be successful. At any rate, the reader who comes to the work unprepared will get at least some notions of general biology. While we do not believe that heredity should be taught except to those who know at least the fundamentals of general biology, we are not prepared to say that the book fails in attaining its objective. It is well written and illustrated and gives sound scientific doctrine to a class of readers that would not otherwise be reached. A helpful glossary is appended. —F. J. W.





